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The Ornithogeography
of the
Yucatán Peninsula

by

RAYMOND A. PAYNTER, Jr.



PEABODY MUSEUM OF NATURAL HISTORY, YALE UNIVERSITY

BULLETIN 9

The Ornithogeography
OF THE
Yucatán Peninsula

By
RAYMOND A. PAYNTER, Jr.

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Harvard University*

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INTRODUCTION

The first systematic study of the avifauna of the Yucatán Peninsula was made by Dr. Samuel Cabot, when he accompanied the famed archeological explorer John L. Stephens during the winter of 1841–42. In the century that followed many collectors visited the region, particularly northern Yucatán, and specimens streamed back to museums throughout the world.

It does not take long to discover all the oddities and to gain a general idea of the character of the fauna in a region so topographically uniform as the Peninsula. The last of the endemic species was described 50 years after Cabot's work, but the majority were named much earlier. The Ocellated Turkey (*Meleagris ocellata*), for example, had been described 20 years before Cabot reached Yucatán. Thus, most of the collectors who visited the Peninsula were concerned with finding new races—the only novelties that remained, and with making regional lists of species, both of which are necessary and useful tasks, paving the way for other types of study.

With the groundwork thoroughly prepared, the time was particularly appropriate for an ornithogeographic survey of the Peninsula. First, however, it was necessary to know more about the distribution of the birds in parts that had not been visited by earlier collectors, and to collect in certain key areas in order to straighten out taxonomic tangles.

My first field work on the Peninsula was undertaken during the period from late October 1948 to July 1949. Work was concentrated in southern and central Quintana Roo, but several weeks were spent on Isla Cozumel in January, and an equal period in eastern Yucatán and northern Quintana Roo during April. I returned to the Peninsula in early December 1950 and worked until mid-March of the following year. Collections were made on Islas Holbox, Mujeres, and Contoy, in northern Quintana Roo, on the coast of Yucatán, in central and southern Campeche, and in southern Quintana Roo. In August and September 1952, the islands on Banco Campeche were visited and a short period was spent in Yucatán.

These expeditions yielded a total of nearly 1900 specimens, which are deposited in the Yale Peabody Museum of Natural History. In addition, the Legters Collection of approximately 1700 specimens from throughout the Peninsula has been utilized, as well as several hundred specimens taken by a local collector in Quintana Roo during my absence from the Peninsula. About half of the former series is now in the Yale Peabody Museum and all of the latter. These collections have been treated as a unit and form the nucleus of the study that follows.

ACKNOWLEDGMENTS

During this study I have received assistance from scores of people, but I have been particularly dependent on the generous and willing cooperation of many persons on the Peninsula of Yucatán. Without their friendliness and hospitality it would have been impossible to achieve much of what was ultimately accomplished.

Foremost among these people are Andrés Baeza and D. Brainerd Legters. The former was my field assistant from the first months of work until the last. His great knowledge of the region and its fauna was invaluable. The latter, an American resident of Yucatán, collected a considerable portion of the specimens used in this study. This contribution alone was extremely important but, in addition, Mr. Legters accompanied me on several occasions into remote districts, he answered innumerable questions regarding the distribution, habits, and local names of the birds, and he made a special effort to secure specimens from areas of critical interest. This survey would be much less complete had it not been for such liberal aid.

During the field work of 1950–1951 I was accompanied by Timothy H. Laughlin, whose untimely death came shortly after our return to this country. His companionship and assistance were vital in making that trip successful. I deeply regret that he did not see the culmination of the project which he so ably assisted.

I wish to thank the authorities of the Dirección General Forestal y de Caza of the Secretaría de Agricultura y Ganadería, who issued the necessary permits for collecting.

The curators of a number of collections have permitted me to use material in their care and have been patient and helpful in response to my frequent inquiries. I am particularly indebted to J. D. Macdonald of the British Museum (Natural History) who spent many hours examining for me specimens which were of the utmost importance in resolving several annoying problems which have existed for almost 100 years. I sincerely appreciate the assistance received from Emmet R. Blake of the Chicago Natural History Museum, from Herbert Friedmann and Alexander Wetmore of the United States National Museum, from Alden H. Miller and Frank A. Pitelka of the University of California Museum of Vertebrate Zoology, from Dean Amadon and John T. Zimmer of The American Museum of Natural History, from Harrison B. Tordoff of the University of Kansas Museum of Natural History, from Robert W. Storer and Josselyn Van Tyne of the University of Michigan Museum of Zoology, from Kenneth C. Parkes of the Carnegie Museum, and from the late James L. Peters of the Harvard University Museum of Comparative Zoology.

For advice and unpublished data I am grateful to Chandler S. Robbins, who sent information on some banding records, to J. B. Siebenaler for

allowing me to examine a manuscript relative to trans-Gulf migration, to Robert P. Allen for outlining the results of his research on the flamingo in Yucatán, to George H. Lowery, Jr. and Robert J. Newman for access to their manuscript on the birds of the Gulf of Mexico, to George B. Saunders who provided me with unpublished records of winter waterfowl censuses in Yucatán, thereby enabling me to avoid omitting from consideration several species, and to Eugene Eisenmann for advice on vernacular names.

I have been exceedingly fortunate in having the excellent counsel of Edward S. Deevey, Jr., James C. Greenway, Jr., G. Evelyn Hutchinson, Ernst Mayr, and S. Dillon Ripley, II. To the last I am particularly obligated for providing the impetus to undertake the project and for his encouragement throughout.

For material support I have been partially dependent on the Yale University Peabody Museum of Natural History and its generous friends and on the Society of the Sigma Xi.

To my parents I am deeply indebted. Without their unflagging interest this study could not have been begun, much less extended for so long.

Margaret Thoms drew the detailed map of the region. Mildred Porter Cloud typed the manuscript and undertook the chore of making it readable and uniform—a lengthy and tedious task which can be fully appreciated only by the author.

This work was originally presented to the Faculty of the Graduate School of Yale University as a dissertation in partial fulfillment of the requirements for the degree of Doctor of Philosophy.

METHODS

I have attempted to be as consistent as possible, or convenient, in certain methods and conventions employed in this work, believing that its usefulness will be enhanced if the reader is certain, at every point, of exactly what the author had in mind.

There is little doubt that vernacular names of birds are useful, and that if they are to be used it is desirable to standardize them. For English vernaculars, I have followed Blake (1953) and Eisenmann (*in litt.*), except for a few names which appear to me to be inappropriate, in which case I substituted names which have been used elsewhere and which seem more satisfactory. The Spanish vernaculars are given whenever they are reasonably specific. There is some variation in their use even between localities on the Peninsula, and a more marked difference between there and other parts of Middle America. Finally, with the aid of Mr. Legters, many Maya names are presented. It is notoriously difficult to record words from an unwritten language, and one will find many variants of spelling and accent (*vide*, Boucard, 1883; Cole, 1906; Van Tyne, 1935). The system which Mr. Legters employs is superior, I believe, in that the Spanish alphabet is used and no special symbols are required, except for the apostrophe ('), which indicates glottalization.

For each species or race the original citation and the type locality are presented. Synonyms are listed only for forms which are synonymized herein.

The Peninsula of Yucatán is considered to consist of the Mexican political divisions of Quintana Roo, Yucatán, and Campeche. This is an arbitrary delimitation, but a convenient one in a region lacking mountains, sharp vegetational discontinuities, or other natural barriers to avian populations. Since many races typical of the drier portion of the Peninsula reach their southern limits roughly along the lower boundaries of Quintana Roo and Campeche, and some species characteristic of heavy rain forest reach their northern limits here, it is found that this is a fairly natural zoogeographical demarcation.

The zoogeographer who is not an ornithologist has been borne in mind in the section entitled RANGE. The distribution of each species has been outlined in moderate detail. If it is a polytypic species the range of the race which occurs on the Peninsula is given fuller treatment and contiguous races are noted also. For the purpose of sketching the Peninsular distribution of the forms, each of the three political divisions is handled as an entity, as well as Banco Chinchorro, Isla Cozumel, Isla Mujeres, Isla Contoy, Isla Holbox, and the islands comprising Banco Campeche. Cayo Culebra is treated in the same manner simply because field work was done there, although it is not to be considered in the same sense as the off-shore islands. There are many similar islands along the coast, such as Isla Cancun and Isla Blanca, but they are so little known it seems valueless to list separately the few species recorded from there.

If a form occurs in a given Peninsular division or island, but a representative from that locality is not present in the collections utilized in this study (listed under SPECIMENS), reference is given to the source of the record. Usually the reference is located within the paragraph entitled RANGE, but on occasion it appears under REMARKS. If a species or race is said to "occur throughout the Peninsula," or words to that effect, it means that representatives from each of the three political divisions will be found listed under SPECIMENS. Insular occurrences, however, are always cited separately.

The section on HABITAT refers to the generalized habitat preference of the bird on the Peninsula only. In some instances, particularly among species which are very localized, the geographical range conveys as much information as a detailed account of the habitat. For example, a number of species are said to be "insular" or "coastal." By this it is meant that these birds are dependent on the sea, but occur on the mainland or the islands, often in the mangroves, on the beaches, or on the mudflats.

The metric system is used throughout. Unless specifically indicated, all culmens were measured from the base of the skull and all wings were measured flattened against a rule. The means are accompanied by their standard errors (σ_m).

An attempt has been made to indicate something of the reproductive

season for each species. By necessity, this is based almost exclusively on positive evidence, although negative information is often as useful. Therefore, when a specimen has been taken in a given month and the species is not listed as breeding at that season, it should not be inferred that the collected bird was reproductively inactive. Many of the specimens were not collected by me and the condition of the gonads was often not noted, or recorded only when found active. Birds which were definitely recorded as not breeding are so listed.

PHYSIOGRAPHY

There have been several excellent descriptions of the physical aspects of the Peninsula (viz., Huntington, 1912; Shattuck, *et al.*, 1933; Echánove, *et al.*, 1945) and there is no reason to repeat in detail this material. The following account, therefore, is brief and emphasis is placed on localities and areas of particular interest in this study.

The Peninsula of Yucatán (Map 1) may be characterized as a lowlying, thick sheet of eroded limestone which lacks major topographic features and which is covered with a very thin layer of soil. In southwestern Yucatán, parallel to the Yucatán-Campeche border, there is a range of hills, approximately 120 kilometers in length, which rises to a maximum elevation of about 250 meters (Pl. 2, fig. 2). This range is called Sierrita de Ticul, Sierra de Yucatán or, locally, La Sierra. On the eastern side of Laguna Chichancanab, Quintana Roo, there is a short series of hills which seldom exceed a height of 100 meters. In the center of the Peninsula, beginning at the junction of Quintana Roo, Yucatán, and Campeche and extending to the highlands of British Honduras, Guatemala, and Chiapas, there is a large, slightly elevated area which rises to 300 meters at a few points near the Quintana Roo-Campeche border, although the average elevation is considerably lower. This district is sometimes called the Central Plateau, although it gently slopes upward toward its center and is not, strictly speaking, a true tableland.

The State of Yucatán and the northern parts of Quintana Roo and Campeche are devoid of permanent surface drainage, but farther south there are a few rivers. The border between Quintana Roo and British Honduras is delineated for most of its length by the Río Hondo, a fairly sizable river which has its source near the juncture of Mexico, British Honduras, and Guatemala, and which discharges into Bahía de Chetumal. In central Campeche the Río Champotón, a smaller stream, flows from the interior of the state to the town of Champotón on the Gulf coast. Southwestern Campeche, which is the terminus of the marshy district centering in eastern Tabasco, has several rivers. The largest is the Río Candelaria which, with a number of tributaries, drains an area nearly as wide as the state and empties into Laguna de Términos.

In Yucatán, and to a lesser extent in the northern parts of Quintana Roo and Campeche, a characteristic feature of the landscape is the presence of scattered *cenotes*. These are natural wells, sometimes more than 50 meters

KEY TO MAP

1. Agua Blanca, Q. Roo
2. Aguada Seca, Camp.
3. Alvaro Obregón
(= Camp Mengel), Q. Roo
4. Apazote, Camp.
5. Baca, Yuc.
6. Bacalar, Q. Roo
7. Boca de Paila, Q. Roo
8. Boca Iglesia, Q. Roo
9. Buctzotz, Yuc.
10. Cabo Catoche, Q. Roo
11. Carrillo Puerto, Q. Roo
12. Cayal, Camp.
13. Cayo Arenas, Camp.
14. Cayo Centro, Q. Roo
15. Cayo Culebra, Q. Roo
16. Cayo Lobos, Q. Roo
17. Cayo Norte, Q. Roo
18. Cayos Arcas, Camp.
19. Celestún, Yuc.
20. Champotón, Camp.
21. Chemax, Yuc.
22. Chetumal, Q. Roo
23. Ch'ich', Q. Roo
24. Chichén Itzá, Yuc.
25. Chunyaxche, Q. Roo
26. Ciudad Campeche, Camp.
27. Colotmul, Yuc.
28. Conkal, Yuc.
29. Dzidzantún, Yuc.
30. Dzilam, Yuc.
31. Dzilam Puerto, Yuc.
32. Dzitás, Yuc.
33. El Cuyo, Yuc.
34. El Vapor, Camp.
35. Escárcega, Camp.
36. Estero Franco, Q. Roo
37. Holcá, Yuc.
38. Ichek, Camp.
39. Isla Blanca, Q. Roo
40. Isla Cancun, Q. Roo
41. Isla Contoy, Q. Roo
42. Isla del Carmen, Camp.
43. Isla Desterrada, Yuc.
44. Isla Holbox, Q. Roo
45. Isla Mujeres, Q. Roo
46. Isla Pájaros, Yuc.
47. Isla Pérez, Yuc.
48. Isla Tamalcab, Q. Roo
49. Iturbide, Camp.
50. Izalam, Yuc.
51. Izamal, Yuc.
52. Kantunil-Kín, Q. Roo
53. Káua, Yuc.
54. Kilómetro Cincuenta, Q. Roo
55. Kimbilá, Yuc.
56. Laguna Bacalar, Q. Roo
57. Laguna Chacabacab, Q. Roo
58. Laguna Chichancanab, Q. Roo
59. La Tuxpeña, Camp.
60. La Vega, Q. Roo
61. Matamoros, Camp.
62. Maxcanú, Yuc.
63. Meco, Q. Roo
64. Mérida, Yuc.
65. Mina de Oro, Yuc.
66. Motul, Yuc.
67. Noh Poop, Q. Roo
68. Pacaytun, Camp.
69. Palizada, Camp.
70. Palmul, Q. Roo
71. Peto, Yuc.
72. Pisté, Yuc.
73. Pixoyal, Camp.
74. Progreso, Yuc.
75. Providencia, Yuc.
76. Pueblo Nuevo, Camp.
77. Puerto Morelos, Q. Roo
78. Río Lagartos, Yuc.
79. San Diego, Yuc.
80. San Ignacio, Yuc.
81. San Joaquín, Yuc.
82. San Juan, Camp.
83. San Juan, Q. Roo
84. San Miguel, Q. Roo
85. Santa Clara, Yuc.
86. Santa Rita, Camp.
87. Schkolak, Yuc.
88. Seibaplaya
(= Ceibaplaya), Camp.
89. Sinaché, Yuc.
90. Sisal, Yuc.
91. Sucopó, Yuc.
92. Tabi, Q. Roo
93. Tancab, Q. Roo
94. Tekit, Yuc.
95. Telchac Pueblo, Yuc.
96. Telchac Puerto, Yuc.
97. Temax, Yuc.
98. Ticúl, Yuc.
99. Tizimín, Yuc.
100. Triángulo Este, Camp.
101. Triángulo Oeste, Camp.
102. Tulum, Q. Roo
103. Tunkás, Yuc.
104. Ucum, Q. Roo
105. Uxmal, Yuc.
106. Vigía Chico, Q. Roo
107. Xbac, Yuc.
108. Xcalac, Q. Roo
109. Xcan, Q. Roo
110. Xcopen, Q. Roo
111. Xocempich, Yuc.
112. Xtocomo, Q. Roo
113. Xulha, Q. Roo
114. Yalahau, Q. Roo
115. Yobaín, Yuc.
116. Yotzonot, Yuc.



MAP 1. COLLECTING LOCALITIES

57. Laguna Chichancanab, Q. Roo
58. Laguna Chichancanab, Q. Roo

116. Yótzonot, Iuc.

in diameter, which are formed when ground-water dissolves large pockets of limestone leaving a surface shell which later collapses exposing a hole with water from 10 to 30 meters below. *Cenotes* have a very limited and local effect on the vegetation.

Temporary water holes (*aguadas*) are thinly distributed about the Peninsula. In Quintana Roo there are a few shallow lakes which retain their water throughout the year, although they are often greatly shrunken in size by the end of the dry season. Laguna Bacalar, in the southeastern part of the Territory, is the largest of these. It is oligotrophic and has rather barren shores, similar to most of the other lakes in the region. Laguna Chichancanab, southeast of Peto, Yucatán, is the next in size. Laguna Chacabacab, variously known as Laguna Chacanbacal, Laguna Alton, Laguna Concepción, and Laguna Acón, and seldom correctly placed on maps, is located in south-central Quintana Roo. It was an important source of specimens used in this study.

The coastal areas are more diverse than the mainland. The northern coast, from Celestún, Yucatán east to the Yucatán-Quintana Roo boundary, is bordered by a sandy barrier beach. Behind this lies La Ciénaga—a series of shallow lagoons, salt flats, and swamps which frequently are erroneously depicted as a long confluent body of water. La Ciénaga, or El Río as it is sometimes called, has several tidal inlets and is navigable in small boats in a few localities, as at Río Lagartos, but in other sections it is nearly dry and is used for the production of salt.

The western side of the Peninsula is a more or less continuous stretch of sandy beach, except in the vicinity of Ciudad Campeche where there are a few low cliffs and the shore is rocky. At Champotón there is a small harbor at the mouth of the river and at the base of the Peninsula there is the large bay of Laguna de Términos, which is nearly cut off from the Gulf by Isla del Carmen.

The eastern shore is more varied. In the northeast there are a few small sandy peninsulas which extend northward and parallel to the coast. One of these is Meco, which Gaumer called "Isla" Meco but which even he properly mapped (1917) as a peninsula. The unfortunate designation of this projection as an island led to considerable confusion in the past, especially when discussing the origin of the insular faunas.

Halfway down the Peninsula there are two large bays known as Bahía de la Ascensión and Bahía del Espíritu Santo, and at the southern extreme of Quintana Roo, the large, but shallow, Bahía de Chetumal.

On the eastern side of the Peninsula the continental shelf is very narrow, but on the western and northern sides it extends into the Gulf for approximately 200 kilometers at some points. Along the edge of the shelf there are shoals and islets. Four tiny groups of islands are sufficiently above the sea to have a sparse land flora. These are Cayos Arcas ($20^{\circ}13' \text{ N.}, 91^{\circ}58' \text{ W.}$), Arrecifes Triángulos ($20^{\circ}58' \text{ N.}, 92^{\circ}20' \text{ W.}$), Cayo Arenas ($22^{\circ}07' \text{ N.}, 91^{\circ}24' \text{ W.}$), and Arrecifes Alacrán ($22^{\circ}23' \text{ N.}, 89^{\circ}40' \text{ W.}$). A detailed description of these sand and coral islets has been given by Paynter (1953).

A short distance off the northern coast of Quintana Roo there is a series of low, sandy islands which appear to be the dissected remnants of a barrier bar. The largest of these are Isla Holbox and Cabo Catoche. On the northeastern corner of the Peninsula, about 15 kilometers from the coast, is Isla Contoy ($21^{\circ}32' \text{ N.}$, $86^{\circ}49' \text{ W.}$) which is essentially several mangrove-covered islets so close to one another they appear to be a single island. A few kilometers to the south, and close to the mainland, is Isla Blanca which was once a small peninsula like Meco but is now separated from the coast by a narrow channel. Isla Mujeres ($21^{\circ}12' \text{ N.}$, $86^{\circ}43' \text{ W.}$), lying about eight kilometers from the coast, is approximately nine kilometers in length and about a kilometer across at its widest point. It is composed of limestone, similar to that on Isla Cozumel, and sand. Isla Cancun is the next sizable island. It lies inshore and slightly south of Isla Mujeres, and apparently was once part of the mainland.

The largest island in the region, and by far the most interesting, is Isla Cozumel which lies 15 kilometers from the mainland at its nearest point. It is a maximum of 45 kilometers in length and about half that at its greatest width. It is composed of limestone and its greatest elevation is about 10 meters above the sea.

There are a few little islands in Bahía de la Ascensión and Bahía del Espíritu Santo, but they are of slight interest with the exception of Cayo Culebra in the former bay. Cayo Culebra is in reality a compact group of several small cays, all covered by mangroves, except for one island which has been cleared and planted with coconuts.

Roughly 30 kilometers off the southernmost coast of Quintana Roo is the inner edge of Banco Chinchorro, an elliptical reef more than 40 kilometers in length and slightly less than half that in width. There are three islands within the reef. Cayo Norte, as the name implies, is at the northern end of the reef. It is the collective name applied to two narrow cays lying next one another. Each is about one kilometer in length and a few hundred meters in width. Cayo Centro, the largest in the group, is an elliptical atoll four kilometers in length which encloses a shallow, muddy lagoon. Cayo Lobos is at the southern end of the bank and is a few hundred square meters in extent.

In Bahía de Chetumal, a little north of the town of Chetumal and close to shore, there is a low, narrow island about eight kilometers long. This is known as Isla Tamalcab or Tamalca.

GEOLOGY

In spite of the apparent simplicity of its structure, the geology of the Peninsula is not well understood. The northern part, roughly consisting of the State of Yucatán, has been studied fairly thoroughly, but southward, particularly in the elevated center of the Peninsula, little exploration has been done and the dating of the strata has been speculative.

The Peninsula north of La Sierra presents few problems. The barrier

beach and the mainland north of 21° N. lat. are Quaternary in age (Sapper, 1937). As Heilprin (1891) has indicated, the Pleistocene deposits, which are marine, are thin and in places denuded, exposing Pliocene chalk. From Mérida south to the range of hills, the deposits are mainly of Pliocene age. It is not known how far south this formation extends to the east of the hills, but Sapper (1937) has mapped it as being present on the eastern coast down as far as Bahía de la Ascención, which is the point reached if a line is drawn across the Peninsula through the long axis of La Sierra. Galloway's (*in* Hatt, *et al.*, 1953) north-south profile of the geological structure of the northern part of the Peninsula, from the coast through Mérida to northern Campeche, indicates no deposits younger than Pliocene between Mérida and La Sierra, but Sapper's (1937) map indicates several small Quaternary pockets near Mérida and Izamal. This suggests that the region was probably inundated by a shallow sea in the Pleistocene which left a thin deposit, now destroyed except in a few isolated places.

Hatt (*in* Hatt, *et al.*, 1953) must have arrived at the same conclusion, although he failed to express it, since he stated (*ibid.*, p. 9), "From the region of Merida to the serranía the rock is Pliocene chalk precisely like the younger rock to the north except that it has a different fossil fauna," but later wrote (*ibid.*, p. 10), "There is indeed no geological evidence that any of the peninsula from the serranía northwards was available to land vertebrates until late Pleistocene-Recent time, . . ."

La Sierra, according to Galloway (*in* Hatt, *et al.*, 1953), is of Miocene age and these strata extend southward beyond the hills for a short distance.

From this point south the picture is less clear. Sapper (1937) showed Quaternary deposits in the vicinity of Champotón, around the entire region of Laguna de Términos, and on the Península de Chetumal which lies to the east of Bahía de Chetumal. The remainder of Campeche and Quintana Roo are indicated to be Miocene limestone, with the exception of a narrow fault zone along the Río Hondo, which is composed of Eocene limestone like that of northern British Honduras. The Miocene formation is shown extending into northern Petén before coming in contact with an Eocene belt.

The presence of a vast Miocene formation in Quintana Roo and Campeche is at variance with the profile by Galloway (*in* Hatt, *et al.*, 1953) who noted that Oligocene formations are found in northern Campeche. This profile does not extend farther than northern Campeche but it can be seen that the Oligocene stratum becomes progressively thinner toward the south and the underlying Eocene layer which slopes up toward the south, as do all the strata, probably becomes exposed somewhere in central Campeche. This is in agreement with the evidence, some unpublished, reviewed by Lundell (1934) which indicates the presence of Oligocene and Eocene limestone, but none from the Miocene, in this region.

Isla Cozumel was mapped by Sapper (1896) as being of Pliocene age. Richards (1937), however, discovered the Pleistocene marine mollusks

Chione cancellata and *Bulla amygdala* near the center of the island. This appears to be good proof that the island was submerged during the Pleistocene.

Nothing is known of the geology of Isla Mujeres, the only other island with old limestone bedrock. There is an impressive similarity between the bedrock of Isla Mujeres and that of Isla Cozumel. A geologist may find this similarity superficial, but to me the islands appear to have been derived from the same stratum. I believe it safe to assume that Isla Mujeres was also submerged during the Pleistocene.

In summary, there is fairly good evidence that the northern third of the Peninsula, as well as parts of its western and eastern coasts and Islas Cozumel and Mujeres, was covered by the sea during parts of the Pleistocene. The remainder of the Peninsula was probably inundated to a considerable extent earlier in its history, but there is as yet no evidence that it was completely submerged later than the Eocene, contrary to Schuchert (1935) who has mapped the entire Peninsula as having been covered during the upper Pliocene-Pleistocene.

CLIMATE

The climate of the Peninsula may be characterized as being tropical, with a relatively constant average temperature throughout the year, and with moderately pronounced dry and rainy seasons. There is no evidence that there has been any major climatic change for at least 1400 years (Page, 1933).

The mean monthly temperature at Mérida ranges from 22.7° C. in January to 28.1° C. in June; the lowest average minimum monthly temperature is 14.5° C., which occurs in January, and the highest average maximum monthly temperature is 36.2° C., which occurs in both April and May (Pérez, 1945). Statistics from localities in other parts of the Peninsula (*vide*, Page, 1933), e.g., Progreso, Chetumal, and Ciudad Campeche, indicate that there is slight variation from the pattern at Mérida. Or, in other words, at any given time the temperature is approximately the same in all parts of the Peninsula.

The amount of precipitation, in contrast to temperature, varies markedly from locality to locality, although throughout the region the rainy season generally begins in May and ends in October. Another generality is that the driest months are February, March, and April.

Page (1933) has shown that less rain falls along the coasts than inland; also that the south receives more rain than the north. This, he explained, is caused by the greater velocity of the winds along the coast, particularly in the north, which interferes with convection and therefore with precipitation. The variation in precipitation may be visualized from the following data (Page, 1933; Pérez, 1945) on the mean annual rainfall at several stations from scattered points on the Peninsula: Progreso, 428 mm.; Mérida, 901 mm.; Tizimín, 1084 mm.; Peto, 977 mm.; Ciudad Campeche, 951 mm.; Champotón, 1281 mm.; Chetumal, 1071 mm.

Data are lacking from the interior of Quintana Roo and Campeche, but Page (1933) presented a schematic rainfall map, which he admitted is based partially on supposition, that indicates between 1500 and 2000 millimeters of rain may occur in the south-central part of this region and 2000 millimeters along the Mexico-Guatemala border. Lundell (1934), however, stated that the vegetation in the south-central area is characteristic of a region with less precipitation and he questioned the validity of Page's mapping. In the southern part of the Peninsula I have seen rain forest much more luxuriant than that near Champotón, the Peninsular locality with the greatest *recorded* rainfall. Presumably this forest is the product of more precipitation. I have also seen the lower, drier forest noted by Lundell. Both authors seem partially correct but because of the lack of exploration in the center of the Peninsula they over-extrapolated and consequently contradicted one another. The south-central region, with little doubt, has less precipitation than surrounding areas but there is also little doubt that districts in southern Quintana Roo and western Campeche have precipitation exceeding the greatest yet known from the Peninsula, and in the magnitude suggested by Page.

In an area, such as the Peninsula, where there is little soil and the bed-rock is so porous that water percolates from the surface to the watertable with great rapidity, the distribution of the rain throughout the year may be as important to the vegetation as the amount of precipitation. Page (1933) has constructed an interesting map which indicates that the eastern coast of the Peninsula receives only between 60 and 70 per cent of its total annual precipitation during the rainy season (May to October), while the central portion, the northern tip of Yucatán, and the southern half of Campeche, receive between 70 and 80 per cent during this period; and northern Campeche and most of the western section of Yucatán receive between 80 and 90 per cent during the same time.

There are two types of storm which deserve brief comment. The first is the norther (*el norte*) which is most common in the winter months. It sweeps down bringing cold, rainy weather which may last from one to five days. The other type is the tropical hurricane or cyclone. These are infrequent, probably averaging about one per year, although seriously destructive storms are even more infrequent. Hurricanes, almost invariably, approach from the east.

PHYTOGEOGRAPHY

The physical aspects of the vegetation of the Yucatán Peninsula are unusually diverse for a tropical coastal plain. Within this limited region the vegetation ranges from xerophilous scrub to high forest. As a generality, the trend is for the vegetation to increase in height from north to south and from the coasts toward the center of the Peninsula. It will be noted that this pattern is similar to that found for the total annual precipitation. There can be no doubt that the amount of rainfall profoundly affects the character of the forest, but also important are the distribution of the preci-

precipitation throughout the year, as distinct from the total precipitation, and the influence of the human population. The effect of the latter is enormous.

Man's influence on the vegetation of the Peninsula has been prolonged and widespread, since for many centuries the region has been the center of a large population. All populations affect the vegetation to some degree, but the Mayas have a corn economy which is particularly destructive to the forest. To plant their corn they fell and burn the trees within a plot of ground (Pl. 4, fig. 1). Corn is then planted, but there is little cultivation because of the shallow soil and rocky terrain. Consequently, within two or three years the field (*milpa*) is choked with weeds and brush and must be abandoned (Pl. 4; fig. 2). It cannot be reused until the vegetation has grown to forest-height, which provides sufficient fuel so that burning will result in the death of the weeds and brush, rather than merely encouraging new growth. Therefore, over the course of hundreds of years probably nearly all of the 140,000 square kilometers of the Peninsula have been cut-over at one time or another. It is unlikely that any pristine forest remains, although some regions in the south and in the east have been left undisturbed for a long period and may properly be considered climax forest.

In the vicinity of Chetumal the influence of man on the vegetation is particularly noticeable because climax forest and disturbed areas exist side by side. Chetumal has become a fair-sized town only within the last 25 years and because farming is not the sole occupation of the inhabitants, as in many Peninsular communities, cultivation of the surrounding countryside has not been thorough. There are, therefore, a few isolated patches of original forest standing amid *acahuales* (abandoned *milpas* or any other secondary growth) of various ages. In the latter part of the dry season the *acahuales*, some of which support low forest, are as dry and leafless as the vegetation of northern Yucatán, while the adjacent undisturbed forest remains green.

The present population of the Peninsula is concentrated in Yucatán and northern Campeche. This region was the site of the Maya New Empire, which began about 987 A.D. (Morley, 1946), and has been occupied by a fairly dense population ever since. Thus, for 1000 years the area has been under *milpa* cultivation. It is now characterized by low deciduous forest (Pl. 2, fig. 2), although a large part of the district has an annual rainfall equal to that in adjacent evergreen forest. No climax or virgin forest remains. Lundell (1934) believed that much of this region was originally covered by an evergreen forest which differed from that farther south in that it lacked mahogany (*Swietenia macrophylla*) and *ramón* (*Brosimum alicastrum*), two species found in wetter forest.

The area surrounding Mérida is further modified by the cultivation of *henequén* or sisal (*Agave* spp.). In this district, which occupies perhaps one-quarter of the state, the fields have been cleared and burned so frequently that only a thick mat of grass remains (Pl. 2, fig. 1).

Several attempts have been made to provide a classification of the vegetational types occurring on the Peninsula. The first is that of Sanders (1921)

who recognized three zones: Scrub, Jungle, and Tropical Rain Forest. The Scrub zone, consisting chiefly of mesquite (*Prosopis* sp.), *Yucca* spp., and *Agave* spp., was plotted as extending across the northern end of the Peninsula in a strip about 60 kilometers wide. The Jungle, which was not defined but which undoubtedly referred to the deciduous secondary forest, occupied the remainder of Yucatán, northern Campeche, and northern Quintana Roo. The third zone, the Tropical Rain Forest, also was not defined but obviously alluded to the broadleaf evergreen forest. It was shown to occupy the remaining parts of the Peninsula and Isla Cozumel.

This classification is simple and useful, but now with a better knowledge of the Peninsula it is obvious that there are several errors in delimiting the zones. First, the mesquite-yucca-agave zone does not extend so far south in Quintana Roo, but rather is confined to a narrow strip along the coast. Second, the Jungle (deciduous forest) does not exist in northernmost Quintana Roo. Third, Isla Cozumel is covered by a deciduous forest rather than by an evergreen forest.

The second attempt to classify the vegetation of the region, and the most elaborate of all, was that of Lundell (1934). He divided the Peninsula into five phytogeographic zones: Northern Yucatán, Eastern Coast, Southern Campeche, Southwestern Campeche, and Northern Petén. Each of these was subdivided into many units. The Northern Yucatán district included Sanders' (1921) Scrub and Jungle zones and was extended south in Campeche to Champotón and into north-central Quintana Roo to include the vicinity of Laguna Chichancanab. It was defined as being a drier region of second growth and cultivated sections. The Eastern Coast zone occupied the remainder of Quintana Roo, including Isla Cozumel, and the northern half of British Honduras. It was characterized as being a more moist, largely climax forest with an abundance of mahogany, *ramón*, and *zapote* (*Achras zapota*), the latter of which is often called sapodilla or chicle. The Southern Campeche zone, a rectangle, extended from a little east of the Quintana Roo-Campeche border west to La Tuxpeña, north to the Northern Yucatán district, and south to the Mexico-Guatemala frontier. It was described as occupying the Central Plateau, being drier than the districts to the east, south, and west, and consisting of forest, seldom exceeding 20 meters in height, characterized by an abundance of sapodilla but with very little mahogany, palm, or fig (*Ficus* spp.). The Southwestern Campeche region, which ranges westward through the remainder of Campeche, was defined as being a high, wet forest of *zapote*, mahogany, Spanish cedar (*Cedrela mexicana*), *Ficus* spp., palms, etc. Finally, the Northern Petén zone, which extended a little into southern Campeche, was defined as being a luxuriant rain forest, characterized by abundant chicle, in a region of high precipitation.

This classification provides an accurate description of the vegetation of the region, although that of northernmost Yucatán is so distinctive I should have named it and given it a rank equal to the other divisions. It is, however, not a very useful classification for a zoologist because seldom do

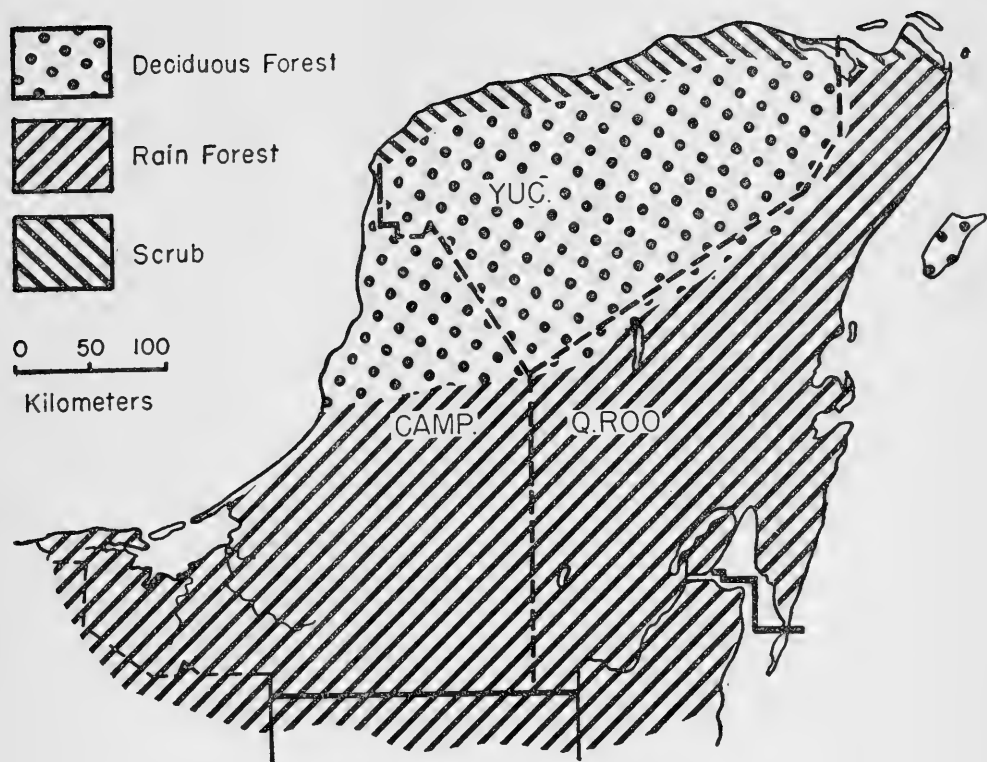
higher animals choose their environment with reference to a given species or two of plant—and it is the presence or absence of a few plant species which distinguishes several of the zones from one another.

The third attempt to classify the vegetational regions of the Peninsula has been made recently by Leopold (1950). This classification, a reconstruction of the original climax vegetation, recognized five zones: Thorn Forest, Tropical Deciduous Forest, Tropical Evergreen Forest, Rain Forest, and Savannah. The Thorn Forest was said to occupy the arid northern coast of Yucatán, and to be characterized by thorny leguminous trees, particularly mimosas. The Tropical Deciduous Forest was shown as a belt approximately 50 kilometers wide extending across the entire Peninsula, immediately south of the Thorn Forest. It is a low semi-arid forest, which loses its leaves during part of the year. The next zone is the Tropical Evergreen Forest, indicated as occupying the remainder of Yucatán, Campeche from about Champotón northward, and a thin strip of Quintana Roo parallel to the Quintana Roo-Yucatán border. This area, as has been indicated above, was thought by Lundell (1934) to have supported a dry phase of the *zapote* forest, although it is now completely covered by second growth. The remainder of the Peninsula, with one small exception, is shown covered by the Rain Forest, which was defined, roughly, as being a higher, more luxuriant type of Tropical Evergreen Forest, with mahogany and *ramón* also present. A patch of Savannah, the fifth phytogeographic district, is shown to extend into south-central Quintana Roo and Campeche from Petén.

Many merits are to be found in these divisions but one serious drawback is the fact that they are based on the original climax types, and these may have little bearing on the present distribution of an animal. This is particularly true for the Tropical Evergreen Forest which is absent and has been replaced by a low deciduous forest with little similarity to the climax type. An apparent error is the inclusion of the Savannah at the base of the Peninsula, since Lundell (1937) showed that the savannahs of Petén exist only in the center of the district, in the vicinity of the lakes.

It is obvious that a classification of vegetation zones which may be useful to the phytogeographer is not necessarily useful to the ornithogeographer. The ornithologist has two criteria which must be met if the classification is to serve him. First, the system must be simple. Any classification which is too finely split becomes unwieldy and confusing. Second, the phytogeographic zones should also reflect the general distribution of the avifauna. A classification, such as that given by Lundell (1934), which is based on the presence or the absence of several species of trees is useless to the ornithologist, although it may be a commendable description of the vegetation. Birds select ecological formations, and probably pay little attention to the species of plants which make up the habitat. Since none of the three previous classifications is wholly adequate it is necessary to draw up one to be used in this work.

It is proposed to recognize three vegetational zones on the Peninsula:



MAP 2. VEGETATION ZONES

Scrub, Deciduous Forest, and Rain Forest. These are plotted on Map 2. Although the delineations between the zones appear as sharp lines on the map, it must be recalled that the transition from one type of vegetation to another is usually gradual, and often subtle. This, as well as minor vegetational discontinuities, could not be depicted. The Scrub zone (Pl. 1, figs. 1 and 2) corresponds to the Thorn Forest of Leopold (1950) and the Scrub of Sanders (1921), although it is somewhat more restricted in range than the latter author mapped it. Islas Holbox and Mujeres fall within this zone. Some species of birds are characteristic of the Scrub and seldom occur outside it, e.g., *Campylorhynchus brunneicapillus yucatanicus* and *Zenaida aurita yucatanensis*.

The Deciduous Forest zone (Pl. 2, fig. 2) combines the regions called by Leopold (1950) Tropical Deciduous Forest and Tropical Evergreen Forest; its limits coincide with Lundell's (1934) Northern Yucatán zone, with the exception of that area which is occupied by the Scrub. Isla Cozumel is included. Within this district are found such characteristic forms as *Pachyrhamphus major itzensis* and *Eumomota s. superciliosa*.

The Rain Forest (Pl. 3, fig. 2) covers the remainder of the Peninsula and has many birds restricted to it, such as *Tinamus major percautus* and *Geotrygon m. montana*.

It should be noted that the Deciduous Forest zone is a vast area of secondary forest and if human influences were removed, all but the northern part would probably revert to the type of forest described by Leopold (1950) as a Tropical Evergreen Forest. Throughout this work species are often said to occur in second growth within the zone of Deciduous Forest. In the strictest sense this is incorrect because most of the Deciduous Forest is secondary growth. However, in the sense employed here, the Deciduous Forest is the higher, older vegetation, while the second growth is the younger, lower vegetation which obviously has resulted from the more recent destruction of the higher forest.

It should also be borne in mind that in the southern part of the Peninsula, in the zone of the Rain Forest, when the climax formation is destroyed, it is replaced by second growth which eventually passes through a stage in which it assumes the characteristics of the deciduous forest farther north. It is always referred to as second growth since one can see examples, near at hand, of climax forest, whereas in the north the nature of the mature forest can be only surmised, since the vegetation is never permitted to attain such an age.

ANNOTATED LIST OF SPECIES

Family TINAMIDAE

TINAMUS MAJOR PERCAUTUS Van Tyne. Great Tinamou. Perdiz Grande.

Tinamus major percautus Van Tyne, Univ. Mich., Mus. Zool., Misc. Pub., 27:8, 1935. (Uaxactún, Petén, Guatemala.)

RANGE. The species occurs from southern Mexico to Amazonia; the race from southern Veracruz to Petén, southern Campeche (Traylor, 1941), and Quintana Roo; an adjoining race, *T. m. robustus*, from northern Oaxaca and Veracruz to Honduras.

SPECIMENS. Quintana Roo—Laguna Chacanbacab, 1♂, May 21, 1949, 1♀, Feb. 14, 1951; Agua Blanca, 1♂, 1♀, June 3, 1949; 24 km. NW. Xtocomo, 1♂, 1♀, Feb. 26, 1951; Km. 25, Chetumal-Bacalar Road, 1♂, Mar. 10, 1952.

HABITAT. Rain forest.

REMARKS. This pale race is particularly common in Quintana Roo in the high, wet forest along the Río Hondo and in the vicinity of Laguna Chacanbacab. It becomes progressively less common farther north on the Peninsula and has not been recorded from Yucatán. The range may extend to the northeastern part of that state where there is a little rain forest, but I have never heard the calls of the species in the area. This, however, may be because field work was not conducted there during the breeding season.

The coloration of these specimens is extremely variable, as was also noted by Van Tyne (1935) with his series, but all are lighter and grayer than *T. m. robustus*. The dorsal barring is also inconsistent, ranging from very distinct bars to narrow and incomplete lines. The sexes are not morphologically distinguishable. The female collected at Laguna Chacanbacab in mid-February is rather dark and presumably young.

BREEDING. Tinamous taken in May and June had enlarged gonads while those of specimens taken in February were only slightly enlarged. Van Tyne (1935) recorded a set of eggs taken in April, in Petén.

WEIGHT. A male and two females, collected in February, weighed 1230, 1063, and 1157 grams respectively. Four males collected by Van Tyne (1935) in Petén ranged from 875 to 1093 grams and three females from 1106 to 1136 grams. Although the data are few, it is of interest to note that the birds from Quintana Roo were comparatively heavier, and that the male was heavier than the females, rather than lighter, as in Petén.

CRYPTURELLUS SOUI MESERYTHRUS (P. L. Sclater).
Little Tinamou. Perdiz Chica. Kel Nom.

Tinamus meserythrus P. L. Sclater, Zool. Soc. London, Proc., 27:392, 1859. (Playa Vicente, Oaxaca.)

RANGE. The species ranges from southern Mexico to Brazil, Peru, and Bolivia; the race from northern Oaxaca and southern Veracruz to southeastern Nicaragua; on the Peninsula in southernmost Campeche (Traylor, 1941) and from southern Quintana Roo north to near Carrillo Puerto.

SPECIMEN. Quintana Roo—Ucum, 1♂, Feb. 25, 1952.

HABITAT. I have never seen this species on the Peninsula, but my local assistant said it is most frequently found in abandoned *milpas*, with considerable second growth, in the zone of rain forest. This observation bears out Griscom's statement (1932) that it is a bird of forest edges and thickets.

REMARKS. Traylor (1941) collected the first specimens of this species on the Peninsula at Pacaytun. It is a rare form but known to the natives as Kel Nom; the term Nom is applied to any small tinamou, but for this species it is modified by Kel, which means "cold," referring to the quivering nature of its call.

Legters, who collected the specimen from Quintana Roo, informs me that he has shot the species on a few occasions near Tabi and Carrillo Puerto. My assistant has seen it quite regularly in southern Quintana Roo but said it is the least common of the tinamous. One was heard at Laguna Chacanbacab in May 1949.

BREEDING. Nothing is known of the breeding season on the Peninsula but presumably it is the same as in Petén, where a young bird was collected in early August (Van Tyne, 1935).

CRYPTURELLUS BOUCARDI BOUCARDI (P. L. Sclater).
Slaty-breasted Tinamou. Perdiz.

Tinamus boucardi P. L. Sclater, Zool. Soc. London, Proc., 27:391, 1859. (Teotacingo, Oaxaca.)

RANGE. The species is resident from southeastern Mexico to Costa Rica; the race from southern Veracruz to northwestern Honduras; on the Peninsula it is apparently confined to extreme southern Quintana Roo.

SPECIMEN. Quintana Roo—Agua Blanca, 1♀, June 1, 1949.

HABITAT. Found only in the wet rain forest bordering the Río Hondo.

REMARKS. The species has not heretofore been recorded from the Peninsula. It was extremely common in the vicinity of Agua Blanca and was heard calling more frequently than any of the other tinamous.

BREEDING. The specimen collected contained two nearly fully developed eggs. Because of the frequency with which the birds called, it is assumed that the breeding season must have been at its height in early June, but Lowery and Dalquest (1951) recorded a nest with eggs in late March in southern Veracruz and Van Tyne (1935) found birds breeding in Petén sometime between late March and early May.

CRYPTURELLUS CINNAMOMEUS GOLDMANI (Nelson).
Rufescent Tinamou. Perdiz. Nom.

Crypturus sallaei goldmani Nelson, Biol. Soc. Wash., Proc., 14:169, 1901. (Chichén Itzá, Yucatán.)

Crypturellus cinnamomeus intermedius Traylor, Field Mus. Nat. Hist., Zool. Ser., 34:199, 1941. (Pacaitun [= Pacaytun], Campeche.)

RANGE. The species occurs from central Sinaloa and southern Tamaulipas to northwestern Costa Rica; the race throughout the Yucatán Peninsula, Tabasco, Petén, and probably at least the northern part of British Honduras; highly polytypic with five other races in Mexico; *C. s. sallaei* contiguous to the west; *C. s. vicinior*, of the highland of Chiapas, Guatemala, and Honduras, probably contiguous to the south.

SPECIMENS. Quintana Roo—Laguna Chacanbacab, 1 ♂, May 13, 1949; Bacalar, 1 ♂, Feb. 9, 2 ♀, Oct. 28, 1952; 24 km. NW. Xtocomo, 1 ♂, 1 ♀, Feb. 25, 1 ♀, Feb. 26, 1 ♂, Feb. 27, 1951; Carrillo Puerto, 1 ♂, Jan. 3, 1 ♂, Jan. 8, 1948, 1 ♂, Apr. 10, 1950; Noh Poop, 1 ♀, Mar. 7, 1 ♂, Mar. 24, 1949; Tabi, 1 ♀, Mar. 17, 1 ♂, Mar. 18, 1 ♂, Mar. 19, 1949, 1 ♂, Mar. 26, 1953; Xcan, 1 ♀, Apr. 27, 1949, 1 ♀, Apr. 9, 1950; Kantunil-Kin, 1 ♂, Apr. 23, 1949. Yucatán—15 km. NW. Dzitás, 1 ♀, Apr. 20, 1949; Xocempich, 1 chick, July 5, 1952.

HABITAT. Occurs throughout the deciduous forest, and in the second growth and edges of the rain forest.

REMARKS. This is by far the most abundant tinamou on the Peninsula. Traylor (1941) has described a race, *C. c. intermedius*, from Pacaytun which is said to be similar below to *C. c. goldmani*, except for a greater area of white on the throat, and similar above to *C. c. soconuscensis*, in that it has a slatish cast.

I have compared two males and two females from Traylor's type series with 12 males, 10 females, and two unsexed specimens from Quintana Roo and Yucatán. I am unable to find uniqueness in the characters ascribed to *C. c. intermedius*, contrary to Pitelka (1948) and Brodkorb (1943a).

The area of white on the throat seems to be fairly uniform throughout the series, if allowance is made for the mode of preparation.

The color and the dorsal barring of the males in any given population are highly variable, as noted by both Traylor (1941) and Conover (1933), and are characters which are almost useless for comparative purposes. The color and dorsal barring of the females is usually more nearly constant; the amount of barring on the breast is variable, however, grading from

very faint to very prominent. This has also been observed by Pitelka (1948).

The ground color on the upper back of one of the females in Traylor's series is reddish, while in the other female it is more brown, but both have a very definite slaty cast. However, a female from Noh Poop is nearly identical in every respect with the reddish specimen, including the slaty back. A female from 15 kilometers northwest of Dzitás, which is a short distance from the type locality of *C. c. goldmani*, and one each from Xcan and Tabi, are all nearly identical with Traylor's more brownish specimen. The remaining females in my series are less slaty but all possess it to some degree.

Traylor (1941, p. 200) stated that the variation in size makes comparison difficult, although "On the whole, *sallaei* and *soconuscensis* seem to average considerably larger than either *goldmani* or *cinnamomeus*, and *intermedius* falls in between." No measurements, other than for the type specimen are given, but Pitelka (1948) presented a list of measurements for eight specimens from San Juan, Campeche, which he identified as *C. c. intermedius*. Although he had only two specimens of *C. c. cinnamomeus* for comparison, his data suggest that *C. c. intermedius* is actually smaller than *C. c. cinnamomeus*. If that is the case, *C. c. intermedius* would be the smallest of the races.

My series of 22 specimens from Yucatán and Quintana Roo shows extreme variability in wing measurement. Often the wings of birds of the same sex from a given locality differ by as much as 10 millimeters. No consistent difference in size can be found between the four topotypes of Traylor's race, my series, and the published measurements of Pitelka's series.

It appears, therefore, that *C. c. intermedius* is untenable and should be synonymized with *C. c. goldmani*.

BREEDING. Specimens collected in early March showed a slight enlargement of the gonads; by April all were in breeding condition. The duration of the reproductive season is unknown. The latest date a mature specimen was taken was in mid-May and the gonads were still enlarged, but a chick, which must have been no more than a week old, was collected on July 5, indicating that breeding may extend well into the summer.

WEIGHT. Two males taken 24 kilometers northwest of Xtocomo weighed 404.5 and 402.4 grams, while two females from the same locality weighed 401.0 and 445.0 grams. Van Tyne (1935) found two breeding females at Uaxactún, Petén, which weighed 424 and 414 grams.

Family PODICIPITIDAE

PODICEPS DOMINICUS DOMINICUS (Linnaeus).

Least Grebe. Pato Chico. Xpatux Já.

Colymbus dominicus Linnaeus, Syst. Nat., ed. 12, 1:223, 1766. (Hispaniola.)

RANGE. The species is found from southern Texas, Baja California, the Bahamas, and the Greater Antilles, through Middle America and much of

South America; the race in the Bahamas, the Greater Antilles, and possibly on Isla Cozumel, Quintana Roo (Wetmore, 1943); the race *P. d. brachypterus* from Texas to Panama.

REMARKS. In his review of the forms of *Podiceps dominicus*, Wetmore (1943) referred eight specimens from Cozumel, which are in the British Museum, to the nominate race, on the basis of their darker flanks, sides, and ventral surfaces. This is discussed further under the following form.

PODICEPS DOMINICUS BRACHYPTERUS (Chapman).

Colymbus dominicus brachypterus Chapman, Am. Mus. Nat. Hist., Bull., 12:256, 1899. (Lomita Ranch, Lower Rio Grande Valley, Texas.)

RANGE. The race occurs from southern Texas, through Mexico, with the exception of Baja California, to Panama; on the Peninsula in Yucatán and Quintana Roo, including Isla Cozumel where possibly only a visitant.

SPECIMENS. Quintana Roo—Laguna Chacabacab, 1♂, May 16, 1♀, May 20, 1949; 46 km. NW. Chetumal, 1♀, Feb. 19, 1949; 15 km. NW. Kantunil-Kin, 1♂, 1♀, Dec. 30, 1950; Isla Cozumel, 1♀, Feb. 5, 1951. Yucatán—Xocempich, 1♂, June 11, 1951, 1♂, May 16, 1953.

HABITAT. Ponds, *cenotes*, and temporary pools in roadside ditches.

REMARKS. The species has not previously been recorded from the mainland of Quintana Roo and only once from Yucatán (Ogilvie-Grant, 1898). Undoubtedly it occurs in Campeche, since it is not uncommon elsewhere on the Peninsula, although restricted by the scarcity of suitable habitats.

The specimen from Cozumel, which was collected by Legters, apparently represents the first taken there since the mid-1880's when Gaumer collected nine (Salvin, 1889; Ogilvie-Grant, 1898). Its subspecific identification produces several problems.

P. d. brachypterus is supposedly distinguishable from the nominate race by a slightly shorter bill and wing, by a lighter ventral surface, and by lighter sides and flanks (Wetmore, 1943). Todd (1911) doubted the validity of *P. d. brachypterus*, claiming that the color differences are inconsistent and that there is too much overlap in size to warrant recognition. Hellmayr and Conover (1948a) accepted the race but noted that some Central American birds so closely approach the West Indian birds in size that they are hardly separable. It is apparent, therefore, that the race *P. d. brachypterus* is a weak one at best.

I have compared the single specimen from Cozumel with two males and three females from Brownsville, Texas, and four males and three females from the mainland of the Peninsula. The culmen of the Cozumel bird measures 19.5 millimeters, which is only 0.5 millimeters longer than the two females with the shortest bills from Texas and the mainland of the Peninsula. The bills of the remaining females range from 20.0 to 24.0 millimeters. The wing of the Cozumel bird measures 93.0 millimeters. The

wings of two females from Texas and the Yucatán Peninsula are slightly shorter, two are equal, and two are slightly longer than the Cozumel specimen. In coloration, the Cozumel specimen is lighter ventrally than the five from Texas, but indistinguishable from those of the Peninsula. The coloration of the sides and of the flanks varies throughout the series with some specimens equal to the Cozumel bird, while others are darker or lighter. It appears, therefore, that it is impossible to distinguish the insular bird from those of the mainland and its taxonomic place is with them.

There are three conclusions which may be drawn from this. The first is that the Cozumel specimen is a migrant. Unfortunately, there is no notation on the label as to the condition of the gonad, which would be helpful in determining the bird's breeding status. The fact that it was taken in early February does not rule out the assumption that it is a migrant; neither does it support it. Another conclusion is that *P. d. brachypterus* is not a valid race, or at least the resident form on Cozumel does not differ from the mainland form, contrary to Wetmore's findings (1943). Since the birds examined by Wetmore were over 50 years old, foxing may have taken place which would account for their darker coloration. The third conclusion is that *P. d. brachypterus* once existed on Cozumel but has been replaced by immigrants from the mainland.

Only the collection of additional fresh material from Cozumel and a re-evaluation of the races of *P. dominicus* will solve the problem.

BREEDING. Apparently these grebes breed more or less throughout the year, as was observed by Gross (1949) in Cuba. Some of the birds collected in February, May, and December had enlarged gonads.

PODILYMBUS PODICEPS PRODICEPS (Linnaeus).
Pied-billed Grebe.

Colymbus podiceps Linnaeus, Syst. Nat., ed. 10, 1:136, 1758. (Carolina.)

RANGE. The species occurs throughout most of North and South America; the race breeds from southern Canada, through the United States and the Bahamas, to central Mexico and possibly on the Yucatán Peninsula; winters south to Panama; on the Peninsula recorded in the winter in Yucatán (Stone, 1890) and Quintana Roo, including Isla Cozumel (sight record); *P. p. antillarum* from the Antilles and central Mexico south to El Salvador.

SPECIMENS. Quintana Roo—15 km. NW. Kantunil-Kín, 1 ♂, Dec. 31, 1950, 1 ♂, 1 ♀, Jan. 1, 1951.

HABITAT. Aguadas, *cenotes*, and sheltered bodies of salt water.

REMARKS. The previous records of this species are from Chichén Itzá (Cole, 1906) and Schkolak (Stone, 1890).

A single Pied-billed Grebe was seen in a pond north of San Miguel, Isla Cozumel, on January 5, 1949, another bird in La Ciénaga at El Cuyo, December 9, 1950, and two at Celestún, January 12, 1951. There were a

number of grebes on the pond near Kantunil-Kín where three specimens were secured.

These specimens are referable to the nominate race; the wings of the males measure 134.0 and 141.0 millimeters and their culmens 22.0 and 23.0 millimeters respectively. The wing of the female is 121.0 and its culmen 18.0 millimeters.

The presence of this race in the winter on the Peninsula is not unexpected, but a puzzling feature is that the collected birds showed indications of being about to breed; if there is a resident race, one would have expected it to be *P. p. antillarum*. Furthermore, although one male is in nearly full breeding plumage, the other two birds are in winter plumage.

BREEDING. The two males had enlarged testes, while the ovary of the female was slightly enlarged.

WEIGHT. The males weighed 447.0 and 457.9; the female 413.6 grams.

Family PELECANIDAE

PELECANUS ERYTHORHYNCHOS Gmelin.

White Pelican. Pelicano Blanco. Alcatraz.

Pelecanus erythrorhynchus Gmelin, Syst. Nat., 1:571, 1789. (Hudson Bay.)

RANGE. Breeds from western North America south to southern California and Texas; winters locally south to Panama; on the Peninsula recorded from Yucatán.

HABITAT. Known only from coast.

REMARKS. On January 14, 1951, seven White Pelicans were seen flying directly overhead at Celestún. A short time later four more came from the direction in which the flock had gone. While it is possible that these were additional birds, it seems more probable that the flock had divided.

This represents the first record of the species from the Yucatán Peninsula.

PELECANUS OCCIDENTALIS OCCIDENTALIS Linnaeus.

Brown Pelican. Pelicano Moreno. Alcatraz. Pontoj.

Pelecanus occidentalis Linnaeus, Syst. Nat., ed. 12, 1:215, 1766. (Jamaica.)

RANGE. The species breeds from southern British Columbia and from South Carolina south to Brazil, Chile, and the Galapagos Islands; the race in the southern Bahamas, and throughout the Antilles, except possibly on the cays of northern Cuba and in the Grenadines (Bond, 1950); wanders to the northern Gulf coast of Florida and presumably merely a visitant in Quintana Roo, including Isla Contoy (Wetmore, 1945); a contiguous race, *P. o. carolinensis*, is discussed below.

HABITAT. Coastal and insular.

REMARKS. Although Brown Pelicans breed on the islands off the coast of Quintana Roo and northern Yucatán, and range along the entire coastline of the Peninsula, few specimens have been collected and, apparently, none is a breeding bird. Wetmore (1945) has examined specimens collected at Puerto Morelos and Isla Contoy. The birds from Puerto Morelos are all referable to the nominate race, but both *P. o. occidentalis* and *P. o. carolinensis* were taken on Isla Contoy at the same time.

It is assumed that *P. o. occidentalis* merely occurs as a wanderer on the Peninsula, but until breeding material of *P. o. carolinensis* has been obtained, this must remain only an assumption.

PELECANUS OCCIDENTALIS CAROLINENSIS Gmelin.

Pelicanus carolinensis Gmelin, Syst. Nat., 1:571, 1789. (Charleston Harbor, South Carolina.)

RANGE. The race breeds on the coast of North America from South Carolina to Panama, and in Venezuela and Trinidad, and presumably on the cays off northern Cuba and on the Grenadines (Bond, 1950); on the Pacific coast from Guatemala, or possibly southern Mexico, to Panama; on the Peninsula has been taken on Isla Contoy, Quintana Roo (Wetmore, 1945) and in Yucatán; sight records from most islands, and from Campeche presumably referable to this race; the adjoining form, *P. o. occidentalis*, is considered above.

SPECIMEN. Yucatán—El Cuyo, 1♀, Dec. 9, 1950.

HABITAT. Found in coastal areas and on islands; a wanderer once inland at Chichén Itzá (Cole, 1906).

REMARKS. The specimen collected is referable to the race *P. o. carolinensis* on the basis of its large size; the wing measures 510.0, the culmen 296.0, and the tail 138.0 millimeters.

Brown Pelicans are ubiquitous on the entire coast and on most of the islands. The only insular localities where they were not seen were on Banco Campeche at Cayos Arcas, Triángulo Oeste, and Cayo Arenas, but the inhabitants said that, although uncommon, they are not usually absent.

BREEDING. In spite of the abundance of the species, I have seen it nesting only on Isla Contoy. Unfortunately, the birds had their nests in the impenetrable mangroves near the center of the island and it was impossible to collect a specimen definitely known to be incubating. They are assumed to have been this race.

The lack of personal observations is probably because of the inopportune time when suitable areas were visited. The species is said by the local people to breed in the following localities: on Banco Chinchorro, on the islands in Bahía de la Ascensión, on Islas Cozumel, Contoy, and Holbox, and near Dzilam Puerto.

The only definite nesting date for the Peninsula is in late December. However, the reproductive season of Brown Pelicans is highly irregular throughout their range (Murphy, 1936, pt. 2), and presumably it is no more consistent on the Peninsula.

Family SULIDAE

SULA DACTYLATRA DACTYLATRA Lesson.

Blue-faced Booby. Pájaro Bobo.

Sula dactylatra Lesson, Traité d'Ornith., 8:601, 1831. (Ascension Island.)

RANGE. The species is of pan-tropical distribution; the race breeds on islands from the southern Gulf of Mexico and southern Bahamas, to Ascension Island; in the vicinity of the Peninsula confined to Banco Campeche.

SPECIMENS. Campeche—Cayos Arcas, 1♂, 2♀, Aug. 29, 1952.

HABITAT. Marine; breeds in sandy areas on isolated islands.

REMARKS. During a visit to the islands of Banco Campeche in late August and early September 1952, an estimated 5000 Blue-faced Boobies were seen on Cayos Arcas, 400 on Cayo Arenas, and 200 on Isla Pájaros of the Arrecife Alacrán group.

The only previous published reports of the Blue-faced Booby in the area are found in a passing reference to it on Triángulo Este (Ward, 1887) and an account of 50 pairs breeding on Arrecife Alacrán (Kennedy, 1917).

On Triángulo Oeste, the only island in the Triángulos group which I visited, no boobies were found and I was told by the inhabitants that they never breed there or on any of the nearby islands. This I doubt since the other cays are larger, uninhabited, and presumably more suitable than Triángulo Oeste. They are very rarely visited and I spoke with no one who had been ashore on them.

One hundred years ago, or earlier, at least one of the cays must have supported a large colony of boobies. This fact is brought to light by communications received by Ward (1887) in his attempt to obtain information relative to the history of the West Indian Seal (*Monachus tropicalis*), which once bred in large numbers on the Triángulos. Ward received letters from W. B. Alexander and from F. A. Lucas who reported that in 1856 ships visited the islands for loads of guano. Whether the guano deposits were ancient and had been abandoned by the birds, or were still being actively added to, is not known. The fact that there were deposits worthy of economic exploitation, even if of only a transitory nature, is of considerable interest. Hutchinson (1950), in his monumental monograph on guano deposits, cited no records of guano islands from the Gulf of Mexico.

BREEDING. The inhabitants of Cayos Arcas informed me that the nesting

season of the Blue-faced Booby is at a peak in June and July. However, in late August I found a few eggs and young still present. Only large young were seen in the main portion of the colony, but at one end of the island there was an isolated group of about 50 nests, all of which contained eggs. The significance of this group of late nests is not known, but it strongly suggests that the grouping was brought about by some type of mutual social stimulation, the nature of which has been discussed by Darling (1938).

J. B. Siebenaler (*in litt.*) visited the Cayos Arcas area on October 7, 1952, and found a booby incubating a single egg on a cay near the main island.

On Cayo Arenas and Arrecife Alacrán nesting had taken place earlier than my visit, as evinced by hollows in the sand and rings of guano.

Undoubtedly, the breeding season is as protracted and irregular on Banco Campeche as it is elsewhere.

SULA SULA SULA (Linnaeus).
Red-footed Booby. Pájaro Bobo.

Pelecanus sula Linnaeus, Syst. Nat., ed. 12, 1:218, 1766. (Barbados.)

RANGE. The species is of pan-tropical distribution; the race breeds in the Antilles, on islands in the Caribbean from British Honduras south, and on islands in the tropical Atlantic; on the Peninsula, it occurs accidentally in southern Quintana Roo.

SPECIMEN. Quintana Roo—Bahía de Chetumal, 1♀, Dec. 21, 1948.

HABITAT. Known only from Bahía de Chetumal.

REMARKS. This specimen, which is in the brown phase, was brought to me by a fisherman who said it was caught in Bahía de Chetumal. I have never seen the species in the region, but presumably occasionally it wanders north from Half-Moon Cay, British Honduras, where there is known to be a breeding colony (Salvin, 1864).

This is the first record of the nominate race within the boundaries of Mexico.

SULA LEUCOGASTER LEUCOGASTER (Boddaert).
Brown Booby. Pájaro Bobo.

Pelacanus leucogaster Boddaert, Table Pl. Enl., p. 57, no. 973, 1783. (Cayenne.)

RANGE. The species ranges throughout the world in tropical seas; the race breeds on islands from the southern Gulf of Mexico and the Antilles, through the Caribbean, to Ascension Island; breeds on a few islands scattered off the coast of the Peninsula.

SPECIMEN. Quintana Roo—Cayo Culebra, 1♀, Apr. 4, 1949.

HABITAT. Marine; breeds on isolated islands.

REMARKS. The Brown Booby is the most generally distributed of the three species recorded from the Peninsula. It is quite regularly seen at sea and in the bays along the coast of Quintana Roo. It is less frequently observed in the open Gulf around Banco Campeche. Approximately 500 were present on Isla Pájaros and 300 on Isla Desterrada at Arrecife Alacrán in early September 1952.

It was interesting to note the distinct behavioral differences between *Sula leucogaster* and *S. dactylatra* on Isla Pájaros. *S. leucogaster* was confined to an islet while the other species was on the main island. Even though the birds were not nesting, it was possible to walk reasonably near the Blue-faced Boobies without frightening them. In contrast, Brown Boobies were excessively shy and flew off when we were a considerable distance from them and separated by a moderately wide water gap.

BREEDING. The "Check-list of the Birds of Mexico" (Friedmann, Griscom, and Moore, 1950) implied that this species breeds on Cayos Arcas, but during my visit the species was not observed.

No Brown Boobies were found nesting on Arrecife Alacrán but the lighthouse keepers told me that they nest on both Isla Pájaros and Isla Desterrada in the spring.

I have never seen concentrations of this species on any of the islands in Quintana Roo. Since most are thickly covered with vegetation, breeding sites are greatly limited. Numerous people told me that boobies breed on Cayo Lobos, Banco Chinchorro. The island is free of vegetation and presumably *S. leucogaster* is the resident, because the only other ground-nesting species recorded from the Peninsula is *S. dactylatra*, and that has yet to be found in Quintana Roo.

Family PHALACROCORACIDAE

PHALACROCORAX AURITUS FLORIDANUS (Audubon).

Double-crested Cormorant. Pato Negro. Cuervo Marino. Camacho.

Carbo floridanus Audubon, Bds. Am., (folio), 3, pl. 252, 1835. (Florida Keys.)

RANGE. The species breeds in North America from Alaska and Newfoundland south to northwestern Mexico, the Bahamas, and the northern Antilles; the race in the southeastern United States, the Bahamas, and Cuba, including the Isle of Pines; winters south to British Honduras; its status in Mexico uncertain, with specimens known only from Quintana Roo, including Isla Cozumel (Salvin, 1889), Isla Contoy, and Cayo Culebra.

SPECIMENS. Quintana Roo—Isla Contoy, 1♂, Dec. 27, 1950; Cayo Culebra, 2♀, Apr. 13, 1949.

HABITAT. Coastal and insular.

REMARKS. Cormorants are found on the coasts throughout the Peninsula. However, unless *Phalacrocorax auritus* and *P. brasilianus* occur together, it is difficult to identify the species with complete certainty in the field, especially when in immature plumage. It seems best, for the present, to accept as records only collected specimens of this species, although there appears to be little doubt that the Double-crested Cormorant winters regularly in Campeche and Yucatán.

Previous records are from Islas Cozumel (Salvin, 1889) and Contoy (Hellmayr and Conover, 1948a).

BREEDING. Although my specimens are in immature plumage, the possibility that the species breeds in Quintana Roo must not be overlooked. The fact that it is abundant there but has not been recorded from other parts of Mexico may be indicative of permanent residence, although the lack of records from elsewhere in Mexico may be caused merely by the reluctance of collectors to take an "uninteresting" species. Both *Phalacrocorax auritus* and *P. brasilianus* breed on Cuba and the Isle of Pines; the discovery that both species are resident on the coast of the Yucatán Peninsula would not be surprising.

PHALACROCORAX BRASILIANUS MEXICANUS (Brandt).

Olivaceous Cormorant. Pato Negro. Cuervo Marino. Camacho.

Carbo mexicanus Brandt, Imp. Acad. Sci., St. Petersburg, Bull., 3, col. 56, 1837. (Mexico).

RANGE. The species breeds from Louisiana, the Bahamas, and Cuba, through Middle and South America; the race from Louisiana, the Bahamas, and Cuba, including the Isle of Pines, through all but northwestern Mexico, south to northern Nicaragua; recorded from Yucatán (Friedmann, Griscom, and Moore, 1950), Campeche (sight record), and Quintana Roo, including Cayo Culebra (sight record), Isla Holbox (sight record), Isla Contoy (sight record), and Isla Cozumel; the race *P. b. chanco* in northwestern Mexico.

SPECIMENS. Quintana Roo—Isla Cozumel, 1 ♀, June 1, 1950; Laguna Chacanbacab, 1 ♀, May 19, 1949.

HABITAT. Coastal, insular, and inland on bodies of fresh water.

REMARKS. This cormorant is very common along the coast and on the islands off Quintana Roo and Yucatán. It was observed in great numbers on Cayo Culebra and Isla Contoy, and in smaller numbers on Isla Holbox and at coastal localities in Yucatán. A few were seen on the mainland of Campeche directly across from Celestún and at Champotón. Although the species has never been collected in Campeche, I have no doubt of the validity of my sight records since the birds were in adult plumage.

Olivaceous Cormorants have been observed inland in Quintana Roo at a

lake 15 kilometers northwest of Kantunil-Kín, as well as at Laguna Chacabacab.

BREEDING. Griscom (1926a) found several thousand cormorants breeding on Cayo Culebra in late January 1926. In mid-April 1949, an equal number was present in the vicinity of the island but the main breeding season appeared to have passed, and only a few hundred nests were still occupied. In late December 1950, thousands of cormorants were nesting on Isla Contoy, but the interior of the island was inaccessible, owing to the dense mangroves, and no reliable estimate of the number of birds present could be made.

I have seen no other breeding colonies on the Peninsula, although the bird taken at Laguna Chacabacab had a slightly enlarged ovary and is presumed to have been about to breed, or to have bred, at the lake in May.

Undoubtedly other breeding colonies exist but were not seen or were not visited at a propitious time. As Griscom (1926a) has remarked, the nesting season is irregular with entirely different periods in colonies only a short distance apart.

ANHINGA ANHINGA LEUCOGASTER (Vieillot).
Anhinga. Camacho.

Plotus leucogaster Vieillot, Nouv. Dict. Hist. Nat., 1:545, 1816. (Florida.)

RANGE. The species ranges from the southeastern United States and western Mexico, through Cuba and the Isle of Pines to northern Argentina; the race south to Colombia; recorded from Yucatán (Stone, 1890), Campeche (Coffey, 1948), and Quintana Roo, including Isla Cozumel (Salvin, 1889).

SPECIMEN. Quintana Roo—Laguna Chacabacab, 1♀, May 18, 1949.

HABITAT. Found chiefly around fresh water but occasionally in sheltered coastal lagoons.

REMARKS. The Anhinga is not common on the Peninsula, presumably because of the lack of suitable habitats. I have seen it only at Celestún and Laguna Chacabacab; in both places it was not numerous.

Young birds banded in Mississippi have been recovered at Palizada and Champotón (Coffey, 1948), indicating that at least part of the winter population on the Peninsula is composed of northern birds.

BREEDING. The specimen collected at Laguna Chacabacab in mid-May had a moderately enlarged ovary.

Family FREGATIDAE

FREGATA MAGNIFICENS ROTHSCILDI Mathews.

Man-o'-war Bird. Rabihorcado. Fregata.

Fregata minor rothschildi Mathews, Bds. Austr., 4:280, 1915. (Aruba, Dutch West Indies.)

RANGE. The species occurs in the eastern Pacific, from California to Peru, and in the Atlantic, from Florida south to Brazil and east to West Africa; the race from Florida and the Antilles, along both coasts of Middle America to northern South America; found along the coasts and on islands throughout the Peninsula.

SPECIMENS. Quintana Roo—Cayo Culebra, 2♂, 1♀, Apr. 4, 1949.

HABITAT. Marine, although occasionally wandering inland.

REMARKS. The Man-o'-war Bird is ubiquitous in coastal areas and on islands throughout. I have seen colonies on Cayos Arcas, Isla Desterrada, Isla Contoy, and Cayo Culebra. Undoubtedly, other colonies exist on Banco Chinchorro, on Isla Holbox, and probably on Isla Cozumel.

BREEDING. The species has as protracted a breeding season on the Peninsula as it has elsewhere (*vide*, e.g., Murphy, 1936, pt. 2). On Cayos Arcas, where there were approximately 500 birds nesting in low shrubs, no eggs were found in late August 1952, although the nests were occupied and presumably laying was about to begin. On Isla Desterrada the birds nest on clumps of sea lavender (*Limonium* sp.) which are no more than three feet high. Here, in early September 1952, there were many occupied nests but few eggs. In early October of the same year, the island was visited by J. B. Siebenaler (*in litt.*) who estimated 2500 nests were present, all of which contained eggs. On December 27, 1950, I visited Isla Contoy where thousands of *Rabihorcados* were nesting in the mangroves. Young were present in a few of the nests but most contained fresh eggs. At Cayo Culebra in early April 1949, birds were nesting in vast numbers in the moderately high trees which cover one of the islets. It was difficult to estimate the number of nests because of their inaccessibility, but several thousand must have been present. Few nestlings were seen and presumably most of the nests contained eggs.

Family ARDEIDAE

ARDEA HERODIAS HERODIAS Linnaeus.

Great Blue Heron. Garza Morena.

Ardea herodias Linnaeus, Syst. Nat., ed. 10, 1:143, 1758. (Hudson Bay.)

RANGE. The species is resident from Alaska and southern Canada through most of the United States to the Greater Antilles, the Galapagos Islands

and southern Mexico; the race breeds in southern Canada, and from eastern Washington through most of central and eastern United States south to Kansas and South Carolina; winters south to northern South America; winters throughout the Peninsula; the breeding form not known; several adjacent races in western North America as well as *A. h. occidentalis* through southeastern United States to southern Mexico and *A. h. repens* in the Greater Antilles.

SPECIMENS. Quintana Roo—Cayo Culebra, 2♂, Apr. 4, 1949.

HABITAT. Primarily coastal and insular; rarely inland on fresh water.

REMARKS. The two specimens are in immature plumage and cannot be allotted subspecific rank with certainty. The wings measure 464.0 and 475.0 and the exposed culmens 150.0 and 159.0 millimeters respectively, which appears indicative of the nominate race.

Friedmann, Griscom, and Moore (1950) granted *A. h. occidentalis* full specific treatment, and recognized *A. h. wardi* and *A. h. lessonii*. It seems better, however, to follow Hellmayr and Conover's treatment (1948a) in which the Great White Heron was considered merely a color phase of *A. h. occidentalis* and in which *A. h. wardi* was synonymized with *A. h. occidentalis*. *A. lessonii* was shown by them to be invalid and inadmittable as a name for birds breeding in Mexico, even if they are found to be morphologically distinct.

The status of the Great Blue Heron in Mexico, and on the Peninsula in particular, is very poorly known, and is made even less intelligible by the treatment of Friedmann, Griscom, and Moore (1950). The manner in which they assigned various records from the Peninsula to *A. h. lessonii* is highly questionable. They placed Yucatán within the range of the race, although in referring to the specimen upon which the record is based stated "(subspecific identity uncertain)." To my knowledge there have been but two collectors on Banco Chinchorro—Griscom and me; neither of us collected Great Blue Herons, yet Chinchorro is also placed within the range of *A. h. lessonii*.

Specimens definitely assignable to the nominate race have been taken at Palizada in late July (Brodkorb, 1943a), and a bird banded in Wisconsin was recovered at Tekit in late December (Cooke, 1946).

Great Blue Herons are seen throughout the year at many coastal areas and on all of the islands, except those of Banco Campeche. Whether the summer birds are solely breeding birds from the Peninsula or nonbreeding northern birds has yet to be determined. It is possible that the resident form is the nominate race, although it would not be unexpected to discover it to be *A. h. repens*, as previously suggested by Bond (1950).

BREEDING. Griscom (1926a) found this species breeding in Bahía de la Ascensión in late January. When I visited the area 23 years later, Great Blue Herons were abundant but no indications of nesting were noted, although many immature birds were present.

ARDEA HERODIAS OCCIDENTALIS Audubon.

Ardea occidentalis Audubon, Bds. Am., (folio), 3, pl. 281, 1835. (Key West, Florida.)

RANGE. The race breeds from eastern Kansas and Texas north to southern Illinois and South Carolina, and southward to Florida and southern Mexico; winters south to Yucatán (Hellmayr and Conover, 1948a) and Quintana Roo (sight records), including Isla Contoy (Hellmayr and Conover, 1948a), Banco Chinchorro (sight record), and Isla Holbox (sight record); contiguous races considered above.

HABITAT. Known only from coastal and insular localities.

REMARKS. Specimens of this race have been collected at Río Lagartos and on Isla Contoy (Hellmayr and Conover, 1948a).

White herons have been reported by Griscom on Cayo Centro, Banco Chinchorro (1926b) and in Bahía de la Ascensión (1926a). I saw several on the same cay on Banco Chinchorro in February 1949, several on Isla Holbox in December 1950, and one at Sisal in early January 1951.

Presumably these sight records are referable to the race *A. h. occidentalis*. However, if *A. h. repens* is found to breed on the Peninsula, at least some may be of that race, since it is also known to occur in several color phases.

BUTORIDES VIRESCENS VIRESCENS (Linnaeus).
Green Heron. Garcita.

Ardea virescens Linnaeus, Syst. Nat., ed. 10, 1:144, 1758. (South Carolina.)

RANGE. The species breeds throughout most of North America from the northeastern United States and southeastern Canada to the Antilles and Central America; the race in North America, east of the Rocky Mountains south to Florida and eastern Mexico, including the Yucatán Peninsula; winters south to northern South America; the contiguous race, *B. v. maculatus*, in the West Indies, on islands off Quintana Roo, on the eastern coast of Central America, and in Panama and western Colombia; additional races in north, northwestern, and north-central Mexico.

SPECIMENS. Quintana Roo—Laguna Chacabacab, 1♂, May 16, 1♂, May 17, 1949; Estero Franco, 2♂, Jan. 25, 1949. Yucatán—Santa Clara, 1♂, Aug. 30, 1950, 1♂, Sept. 14, 1♀, Sept. 15, 1950, 1♂, May 31, 1952. Campeche—Champotón, 1♀, Sept. 23, 1950.

HABITAT. Found within mangroves and at edges of ponds and rivers.

REMARKS. The Green Heron is relatively common wherever there are suitable habitats.

It is rather surprising that all of the birds from Quintana Roo have

long wings and belong without question to the nominate form. Van Tyne (1935) found *B. v. maculatus* in Petén, and one would have expected intergrades in southern Quintana Roo.

Migrants, presumably of this race, have been recorded from Triángulo Oeste, Cayo Arenas, and Arrecife Alacrán on Banco Campeche (Paynter, 1953).

BREEDING. A bird taken in late January had slightly enlarged gonads while those taken in May were in full breeding condition.

BUTORIDES VIRESCENS MACULATUS (Boddaert).

Cancroma maculata Boddaert, Table Pl. Enl., p. 54, 1783. (Martinique.)

RANGE. The race breeds in the West Indies, on Banco Chinchorro, and probably on Isla Cozumel, Quintana Roo, and in eastern Central America from Petén, Guatemala south to Panama and western Colombia.

SPECIMENS. Quintana Roo—Cayo Centro, Banco Chinchorro, 1♂, 1♀, Feb. 4, 1949.

HABITAT. Insular mangrove swamps.

REMARKS. The Green Heron is common on both Cayo Norte and Cayo Centro of Banco Chinchorro.

The wing of the male measures 166.5 and that of the female 165.0 millimeters, placing the birds without doubt, within the race *B. v. maculatus*. The throat of the male is without any light markings; erythristic phases of this nature are common in *B. v. maculatus* but occur much less frequently in the nominate race (Peters, 1913).

There are ten specimens in the British Museum which were collected many years ago by Gaumer on Isla Cozumel. Mr. J. D. Macdonald has kindly measured these specimens for me. The only specimen which was sexed is a male; its wing measures 173 millimeters. The wings of the nine unsexed specimens range from 165 to 176 with a mean of 171.3 ± 3.2 millimeters.

Without knowing the sexes of these birds it is difficult to assign them to either race with confidence. The mean falls between those given by Peters (1913) for 20 specimens of each race, but nearer to *B. v. maculatus* than the nominate form. There is little question that at least part of the series is definitely *B. v. maculatus*. It is possible that migrants are included in the series, but if both races are represented it remains to be determined which is the visitant and which is the resident. In view of the fact that *B. v. maculatus* is known to be resident on Banco Chinchorro, it appears best to assign tentatively specimens from Cozumel to that race.

BREEDING. Griscom (1926b) collected a bird on Chinchorro in January with slightly enlarged gonads. The two specimens collected by me in February were skinned by my local assistant who failed to record the condition of the gonads.

FLORIDA CAERULEA (Linnaeus).

Little Blue Heron. Garcita Morena. Garcita Blanca.

Ardea caerulea Linnaeus, Syst. Nat., ed. 10, 1:143, 1758. (South Carolina.)

RANGE. Breeds from the southeastern United States through much of Mexico, the West Indies, Central, and South America; northern birds often winter to the south; found throughout the Peninsula and on all of its islands, except those of Banco Campeche.

SPECIMENS. Quintana Roo—Chetumal, 1♂, Dec. 4, 1948; Tabi, 1♀, Mar. 13, 1949. Yucatán—Santa Clara, 1♂, Sept. 5, 1♂, Sept. 14, 1950.

HABITAT. Primarily coastal and insular, but occasionally inland on fresh water.

REMARKS. Little Blue Herons are common at nearly all sheltered coastal and insular localities.

Friedmann, Griscom, and Moore (1950) do not list the species from Campeche, but a bird banded in Mississippi was recovered four years later on the Río Candelaria (Coffey, 1948). I found the species common on the Río Champotón in late January.

A great excess of white-plumaged birds to adults suggests that a considerable number of Little Blue Herons are young visitants from the north. This is borne out by the recovery in Yucatán and Quintana Roo of young birds banded in Mississippi (Coffey, 1948).

BREEDING. I know of no record of this species breeding on the Peninsula, although it doubtless does. The specimen collected at Tabi is in full breeding plumage and had a moderately enlarged gonad. No ponds exist for many miles around the village and presumably the bird was a wanderer from a coastal rookery. However, it may possibly have been only a migrant, since Coffey (1948) recorded a banded northern bird which was recovered at Carrillo Puerto, just a short distance from Tabi.

DICHROMANASSA RUFESCENS RUFESCENS (Gmelin).

Reddish Egret. Garza Colorada.

Ardea rufescens Gmelin, Syst. Nat. 1:628, 1789. (Louisiana.)

RANGE. The species breeds from the Gulf coast of the United States through Mexico, the Bahamas, and the Greater Antilles; probably only a winter visitant from Guatemala to Venezuela; the nominate form breeds throughout the range with the exception of Baja California, Sonora, and Sinaloa, where the doubtfully distinct form *D. r. dickeyi* is found, and possibly in Quintana Roo, where *D. r. colorata* may still occur; on the Peninsula recorded from Campeche (Friedmann, Griscom, and Moore, 1950),

Yucatán (Lawrence, 1869) and Quintana Roo, including Isla Cozumel (Salvin, 1889), Isla Holbox, Cayo Culebra, and Banco Chinchorro.

SPECIMENS. Quintana Roo—Cayo Centro, Banco Chinchorro, 1 ♀, Feb. 5, 1949; Cayo Culebra, 1 ♀, Apr. 3, 1 ♂, 1 ♀, 1 ♀, Apr. 4, 1949; Isla Holbox, 1 ♀, Dec. 18, 1950.

HABITAT. Coastal and insular.

REMARKS. Reddish Egrets occur in suitable marine habitats throughout much of the Peninsula and its adjacent islands. They are seldom abundant, except at Cayo Culebra where at least 100 were seen in early April.

BREEDING. Three of the four specimens from Cayo Culebra are birds of the year and two still have a few wisps of down remaining on their heads. They undoubtedly hatched in the region. This problem is discussed further under the following form.

DICHROMANASSA RUFESCENS COLORATA Griscom.

Dichromanassa rufescens colorata Griscom, Am. Mus. Novitates, No. 235:9, 1926. (Cayo Culebra, Bahía de la Ascensión, Quintana Roo.)

RANGE. The race is known only from Cayo Culebra, Quintana Roo, and may now be extinct.

REMARKS. *D. r. colorata* was described from five adult specimens, of which only two were preserved, collected in 1926.

The race was said to differ from the nominate form in being slightly larger, but with a proportionately shorter bill, in having a paler neck and head, in having vinaceous bases and edges to the wing coverts, and in having vinaceous instead of slaty plumes.

I have examined the two specimens of this race and am unable to recognize any difference between it and the nominate form in the color of the head and neck, which is an extremely variable character, or in size. The coloration of the plumes and wing coverts, however, is markedly different.

An examination of almost any adult specimen of the nominate form from any locality will reveal an incipient tendency toward the characters which so distinctly separate *D. r. colorata*. The bases of some wing coverts are vinaceous. This may extend for more than half the length of the feather and on either or both sides of the shaft. The plumes also exhibit this variation. Occasionally an entire plume is vinaceous, but in others this color is found only on the shaft or at the base, and either unilaterally or bilaterally. Thus, the characters which separate *D. r. colorata* are merely accentuations of existing tendencies. Moreover, the brown edgings to the wing coverts strongly suggest a partial retention of the juvenal plumage.

The species was abundant at Cayo Culebra in early April 1949, with immature birds greatly exceeding the number of adults. Of the four specimens taken at this locality, only one is an adult and this is referable to the nominate race. The three immature specimens cannot be distinguished

from those of equal age from within the range of *D. r. rufescens*. It is probable that immature birds of *D. r. colorata* would not be separable from immature *D. r. rufescens*.

The sample of Reddish Egrets from the Peninsula, and especially from Cayo Culebra, is too inadequate to do more than to speculate on the present status of *D. r. colorata*. Although it is entirely possible that the race still exists and that the three immature specimens are from that population, while the adult is a visitant, it seems more probable that *D. r. colorata* is extinct. This supposition is based on the following speculations.

It will be noted that *D. r. colorata* differs from the nominate race in one character—color, and that this character is reminiscent of the juvenal plumage. In a small isolated population any character, and especially the retention of a juvenal character, might easily become accentuated, without selective or adaptive advantages, merely through genetic drift.

At the time the race was discovered, the population on Cayo Culebra consisted of about 50 pairs (Griscom, 1926a). During this same period the population on the coast of the United States had reached its lowest ebb. In recent years, however, there has been a substantial population increase and presumably more northern birds winter on the coast of the Peninsula now than did 25 years ago. It follows that panmixia was much less likely to occur previously and therefore there was a greater opportunity for the Cayo Culebra population to remain morphologically distinct.

Even if winter visitants which remained to breed were not the cause of the loss of the distinctive character of the population, other causes may have played a role. A nonadaptive character which arises in a small population through genetic drift might be lost with equal ease through the same force. Or, emigration and immigration from and to the Cayo Culebra population and other Peninsular colonies, even if on a very small scale, could easily and rapidly alter the genetic constitution of a population as small as 100 birds.

It is entirely possible that the race was discovered fortuitously during a stable period. Although it must be admitted that such rapid genetic changes are poorly known in natural populations, and that the entire case is built on the slimmest evidence, there is no reason to doubt that it can and does occur. Only more collecting at Cayo Culebra can provide an answer to this problem.

BREEDING. Griscom (1926a) found the colony nesting in late January.

CASMERODIUS ALBUS EGRETTE (Gmelin).
American Egret. Garza Blanca.

Ardea egretta Gmelin, Syst. Nat., 1:629, 1789. (Cayenne.)

RANGE. The species is distributed in temperate and tropical regions throughout most of the world; the race from the southern United States

through Mexico, the West Indies, Central, and South America; northern birds range widely during the winter; recorded from throughout the Peninsula and all of its islands, except those of Banco Campeche, where found only on Cayos Arcas.

SPECIMENS. Quintana Roo—Km. 20, Chetumal-Bacalar Road, 1 ♀, Oct. 31, 1948; Chetumal, 1 ♀, Dec. 4, 1948.

HABITAT. Chiefly coastal and insular but frequently seen inland at *cenotes*, lakes, and rivers.

REMARKS. The American Egret is less common than *Leucophoyx thula*. I found it in particularly large numbers in the lagoon behind Dzilam Puerto, in late December, but elsewhere it was unusual to see more than five or ten birds together. However, although scattered, it is not uncommon.

Many of the birds observed in the winter must be northern visitors since there is a record of a bird banded in Mississippi and recovered at Chetumal (Coffey, 1948), and a lone bird was seen during the fall migration on Cayos Arcas (Paynter, 1953).

BREEDING. This heron probably breeds in a number of localities on the Peninsula. I have not seen a rookery but this is doubtless due to the seasons in which I visited suitable locations. Griscom (1926a) was told by a native that a colony exists in Bahía de la Ascensión, where nesting takes place in late February.

LEUCOPHOYX THULA THULA (Molina).
Snowy Egret. Garcita Blanca.

Ardea thula Molina, Sagg. Stor. Nat. Chile, p. 235, 1782. (Chile.)

RANGE. The species breeds from the southern and western United States to Chile and northern Argentina; the race from the southeastern United States to Chile and Argentina; ranges throughout the Peninsula and on all of the islands, except those of the Banco Campeche, where transient and known only from Triángulo Oeste (Paynter, 1953); *L. t. brewsteri* west of the Rocky Mountains to northern Mexico, including Baja California.

SPECIMENS. Quintana Roo—20 km. NW. Chetumal, 2 ♀, Dec. 1, 1948; Carrillo Puerto, 1 ♀, June 10, 1950.

HABITAT. Primarily coastal and insular; rarely inland.

REMARKS. The Snowy Egret is the most common of the smaller species of herons.

BREEDING. This is another species for which no reliable breeding records exist. Griscom (1926a) reported that the species was said to breed in Bahía de la Ascensión in late February, and I was told that rookeries are present on Isla Contoy. Observations during the proper season should reveal colonies in many other localities.

HYDRANASSA TRICOLOR RUFICOLLIS (Gosse).
Louisiana Heron. Garza Azulosa.

Egretta ruficollis Gosse, Bds. Jamaica, p. 338, 1847. (Burnt Savanna River, Jamaica.)

RANGE. The species is found from the southern United States, the Bahamas, and the Greater Antilles, south to Ecuador and Brazil; the race throughout the range with the exception of Trinidad, the Guianas, and Brazil; on the Peninsula in Campeche (Brodkorb, 1943a), Yucatán, and Quintana Roo, including Isla Cozumel (Salvin, 1889), Isla Holbox (sight record), and Banco Chinchorro.

SPECIMENS. Quintana Roo—Cayo Centro, Banco Chinchorro, 2♂, 1♀, Feb. 4, 1949; Laguna Chacanbacab, 1♀, May 16, 1949. Yucatán—Santa Clara, 1♂, Sept. 2, 1♂, 1♀, 1♀, Sept. 12, 1♀, Sept. 13, 1♀, Sept. 14, 1950.

HABITAT. Chiefly coastal and insular, but occasionally ranging inland.

REMARKS. Louisiana Herons are very local on the Peninsula, but in some coastal areas they are present in large numbers.

BREEDING. No breeding record is known to me, although there is little doubt that the species breeds on some of the islands, probably in the lagoons behind the barrier bar of Yucatán, and in the swampy area of southwestern Campeche.

AGAMIA AGAMI (Gmelin).
Chestnut-bellied Heron.

Ardea agami Gmelin, Syst. Nat., 1:629, 1789. (Cayenne.)

RANGE. Occurs very locally from southern Mexico to Panama; widely distributed from Colombia to Bolivia and the western Matto Grosso; recorded only from Quintana Roo on the Peninsula.

SPECIMEN. Quintana Roo—24 km. NW. Xtocomo, 1♀, Feb. 26, 1951.

HABITAT. Found at a small pool surrounded by high, dense vegetation.

REMARKS. This nonbreeding specimen is the only record from the Peninsula. Its presence was to be expected, however, since a specimen had been collected in Petén, and there are several records from British Honduras (Sharpe, 1898).

WEIGHT. It weighed 633.9 grams.

NYCTANASSA VIOLACEA VIOLACEA (Linnaeus).
Yellow-crowned Night Heron

Ardea violacea Linnaeus, Syst. Nat., ed. 10, 1:143, 1758. (Carolina.)

RANGE. The species breeds from central North America south to Peru, Brazil, and the Galapagos Islands; the race from northeastern United States to southern Texas and eastern Mexico; migrates south to Panama; on the Peninsula in Campeche (Traylor, 1941), Yucatán, and Quintana Roo, including Isla Cozumel (Salvin, 1889), Banco Chinchorro (Griscom, 1926b), Isla Holbox (sight record), Isla Contoy (sight record), Isla Mujeres (sight record), and Cayo Culebra; *N. v. bancrofti* from Baja California and western Mexico south to El Salvador, and throughout the Bahamas and the West Indies.

SPECIMENS. Quintana Roo—Chetumal, 1♂, Oct. 31, 1948; Vigía Chico, 2♀, Mar. 30, 1949; Cayo Culebra, 1♂, 1♀, Apr. 5, 1949. Yucatán—Santa Clara, 1♀, Sept. 11, 1950.

HABITAT. Coastal and insular; more rarely inland.

REMARKS. Yellow-crowned Night Herons are abundant in suitable habitats throughout the Peninsula.

BREEDING. Griscom (1926a) reported the species breeding at Boca de Paila in early February.

COCHLEARIVS COCHLEARIVS ZELEDONI (Ridgway).
Boat-billed Heron. Kuka.

Cancroma zeledoni Ridgway, U. S. Nat'l Mus., Proc., 8:93, 1885. (Mazatlán, Sinaloa.)

RANGE. The species occurs from Mexico to Peru and Brazil; the race from Tamaulipas and Sinaloa to northern Costa Rica; on the Peninsula in Yucatán and Quintana Roo, including Isla Cozumel (Salvin, 1889), Cayo Culebra (Griscom, 1926a), and Isla Contoy.

SPECIMENS. Quintana Roo—Isla Contoy, 1♀, Dec. 27, 1950. Yucatán—Santa Clara, 1♂, Nov. 30, 2♂, Dec. 15, 1951.

HABITAT. Found at wooded insular and coastal localities, as well as along rivers and larger bodies of fresh water.

REMARKS. Boat-billed Herons appear to be rather local on the Peninsula, but this may be because of their secretive and nocturnal nature.

A large breeding colony exists somewhere within 50 kilometers of the mouth of the Río Hondo. I have never seen this place, but numerous people told me of a marsh, on the Mexican side of the river, where the species is said to occur in large numbers.

BREEDING. Griscom (1926a) found a small colony breeding on Cayo Culebra in early February.

HETEROCNUS MEXICANUS MEXICANUS (Swainson).

Bare-throated Tiger-Heron.

Tigrisoma mexicana Swainson, in Murray's Encl. Geog., p. 1383, 1834. (Real del Monte, Hidalgo.)

RANGE. The species ranges from Mexico to northwestern Colombia; the race from Colima and southern Tamaulipas to northwestern Colombia; on the Peninsula in Yucatán (Sharpe, 1898) and Quintana Roo, including Isla Cozumel (Salvin, 1889); *H. m. fremitus*, of Sinaloa and Sonora, doubtfully distinct.

SPECIMENS. Quintana Roo—Laguna Chacanbacab, 2♂, May 21, 1949.

HABITAT. Vicinity of fresh and brackish water marshes.

REMARKS. *Heterocnus mexicanus* appears to be very local on the Peninsula, probably owing to the lack of suitable habitats. I have seen the species only at Laguna Chacanbacab, where it was fairly abundant; Griscom (1926a) reported it common at Boca de Paila.

BREEDING. The species was nesting in early February at Boca de Paila (Griscom, 1926a). One of the specimens from Laguna Chacanbacab, both of which are in immature plumage, had slightly enlarged testes. Griscom (1926a) also found an immature bird breeding.

IXOBRYCHUS EXILIS EXILIS (Gmelin).

Least Bittern.

Ardea exilis Gmelin, Syst. Nat., 1:645, 1789. (Jamaica.)

RANGE. The species breeds from southern Canada through the Bahamas, Greater Antilles, Mexico, and Central America to Paraguay; the race from Saskatchewan eastward and south through the Bahamas, the Greater Antilles, and eastern Mexico to Nicaragua; winters from the southeastern United States through at least the southern part of its breeding range; on the Peninsula known only from Banco Chinchorro, Quintana Roo; a race in western North America and one in Sonora.

SPECIMEN. Quintana Roo—Cayo Norte, Banco Chinchorro, 1♀, Feb. 4, 1949.

HABITAT. Thick mangrove swamp.

REMARKS. The specimen collected represents the first record of this species from the Peninsula. I have never seen another there but, owing to its secretive nature, it may be more common than the lack of records would seem to indicate.

While the species may be resident on Banco Chinchorro, it seems more probable that it is only a winter visitant.

BOTAURUS LENTIGINOSUS (Rackett).
American Bittern.

Ardea lentiginosa Rackett, in Pulteney's Cat. Bds., etc. of Dorsetshire, p. 14, 1813. (Dorsetshire, England.)

RANGE. Breeds from southern Canada throughout most of the United States; winters from the southern portion of its breeding range through all of Mexico, on some of the Greater Antilles, and occasionally south to Panama; sight records from Quintana Roo.

REMARKS. Griscom (1926a) observed an American Bittern near Chun-yaxche, in late January or early February 1926.

I have seen the species twice in Quintana Roo; once, on November 14, 1948, in a wet field at the outskirts of Chetumal, and once, on December 30, 1950, in a marsh near a small lake 15 kilometers northwest of Kantunil-Kín. On both occasions the birds were seen distinctly and there is no doubt of their identity.

BOTAURUS PINNATUS (Wagler).
Pinnated Bittern.

Ardea pinnata Wagler, Isis, col. 662, 1829. (Bahia, Brazil.)

RANGE. Locally distributed in northern Argentina, Uruguay, eastern and central Brazil, the Guianas, Venezuela, Trinidad, western Ecuador, Colombia, southern Nicaragua, and southern Mexico, where known only from southern Quintana Roo.

SPECIMENS. Quintana Roo—Laguna Chacanbacab, 1 ♂, May 20, 1 ♀, May 21, 1949.

HABITAT. Marshes bordering Laguna Chacanbacab.

REMARKS. The collection of these specimens constitutes a new record for Mexico and represents a considerable northern extension to the known range of a rare species.

At least ten bitterns were seen during each day in the field while in the vicinity of Laguna Chacanbacab, but the birds were extremely difficult to approach within gunshot. In mid-February 1950, the area was revisited but the lake was nearly dry and no bitterns were seen.

The plumage of both birds is partly worn. Their coloration, therefore, cannot be accurately compared with that of specimens from other regions.

In general, the birds from Quintana Roo appear to be slightly larger

than a series of 12 specimens from South America and Nicaragua, but there is some overlap and a larger series of Mexican birds is needed to be certain the difference is real.

The wing, tail, and exposed culmen of the male measure 306.0, 108.0, and 93.0 millimeters respectively; in the female these measurements are 281.0, 101.0, and 86.0 millimeters.

BREEDING. Both specimens had enlarged gonads and appeared nearly ready to breed.

Family CICONIIDAE

MYCTERIA AMERICANA Linnaeus.

Wood Ibis. Galletan.

Mycteria americana Linnaeus, Syst. Nat., ed. 10, 1:140, 1758. (Brazil.)

RANGE. Breeds from the southeastern United States and the Greater Antilles, through Mexico, Central America, and much of South America; recorded from the three political divisions of the Peninsula (specimens and sight records), and on Isla Holbox (sight record), Isla Contoy (sight record), Isla Cozumel (Salvin, 1889), Cayo Culebra (sight record), and Banco Chinchorro (sight record).

SPECIMEN. Yucatán—Santa Clara, 1 ♀, Oct. 2, 1951.

HABITAT. Most commonly found on heavily wooded islands and in coastal locations; occasionally well inland along rivers.

REMARKS. The Wood Ibis is found locally but regularly on the mainland. It is more abundant on the islands, but rarely are more than ten birds seen in a flock.

JABIRU MYCTERIA (Lichtenstein). Jabiru.

Ciconia mycteria Lichtenstein, Abh. K. Akad. Wiss. Berlin, Phys. Kl., p. 163, 1816–1817 (1819). (Brazil.)

RANGE. Occurs rarely and locally from southern Mexico through Central America, and more commonly throughout much of South America; one sight record from Quintana Roo.

REMARKS. A pair of these birds was observed from May 12 to 17, 1949, on the savanna surrounding Laguna Chacanbacab. The species has never before been reported from the Peninsula, and on only a few occasions elsewhere in Mexico.

Family THRESKIORNITHIDAE

EUDOCIMUS ALBA (Linnaeus).

White Ibis. Coco.

Scolopax alba Linnaeus, Syst. Nat., ed. 10, 1:145, 1758. (Carolina.)

RANGE. Occurs from southeastern United States and the Antilles, through Mexico and Central America to northern South America; ranges throughout the coasts of the Peninsula and on Isla Cozumel (Salvin, 1889), Isla Contoy (sight record), Cayo Culebra (sight record), Banco Chinchorro (sight record), and Isla Holbox.

SPECIMENS. Quintana Roo—Isla Holbox, 1 ♀, Dec. 18, 1950. Yucatán—Santa Clara, 1 ♀, Dec. 1, 1951. Campeche—Champotón, 1 ♂, 2 ♀, Sept. 23, 1950.

HABITAT. Coastal and insular.

REMARKS. The White Ibis is relatively common wherever there is at least a moderately high forest near the water. Flocks of 50 birds are not infrequent in undisturbed localities. One exception to this generalization was seen on December 6, 1950, at Dzilam Puerto. In the vast shallow lagoon behind the town several hundred ibis were feeding. At dusk large flocks flew in from the east, circled the lagoon and were joined by the feeding birds. They then flew slightly inland and settled on the trees. The flocks were so numerous it was not possible to estimate the number of individuals with any degree of accuracy but there must have been a minimum of 500 birds and possibly well over 1000.

BREEDING. No breeding colonies have been seen by me, although I was told that ibis breed regularly on the islands off Quintana Roo. While traveling by plane from Isla del Carmen, Campeche, to Villahermosa, Tabasco, in early September, many ibis were observed in the swamps southwest of Laguna de Términos. This region appears ideally suited for breeding colonies of ibis, as well as herons and other water birds.

AJAJA AJAJA (Linnaeus).

Roseate Spoonbill. Chocولاتera.

Platalea ajaja Linnaeus, Syst. Nat., ed. 10, 1:140, 1758. (Jamaica.)

RANGE. Resident from southern United States through the Greater Antilles, Mexico, Central America, and much of South America; known from Yucatán and Quintana Roo, including Isla Cozumel (Salvin, 1889), Isla Holbox (sight record), Isla Contoy (sight record), and Cayo Culebra (sight record).

SPECIMENS. Quintana Roo—Vigía Chico, 1 ♀, Mar. 30, 1949. Yucatán—Santa Clara, 1 ♀, Sept. 5, 1950, 1 ♂, Oct. 17, 1951.

HABITAT. Coastal and insular.

REMARKS. The species is nowhere on the Peninsula present in great numbers and has yet to be found in Campeche. Other than for the localities listed above, it has been observed in Quintana Roo at Boca de Paila (Griscom, 1926a) and Boca Iglesia, and in Yucatán at Río Lagartos (Boucard, 1883).

BREEDING. Griscom (1926a) found 25 pairs breeding at Cayo Culebra and 11 pairs at Boca de Paila in late January and early February. I saw a total of only ten spoonbills, several of which were nesting, at Cayo Culebra in early April 1949. It is probable the main nesting season takes place about the first of the year and the birds then disperse. However, five nonbreeding birds were seen at Isla Contoy in late December 1950, although the thick mangroves appear to be an ideal nesting site.

Family PHOENICOPTERIDAE

PHOENICOPTERUS RUBER RUBER Linnaeus.
American Flamingo. Flamenco.

Phoenicopterus ruber Linnaeus, Syst. Nat., ed. 10, 1:139, 1758. (West Indies.)

RANGE. The species is locally distributed in the Bahamas, Greater Antilles, Yucatán Peninsula, islands in the southern Caribbean, Galapagos Islands, and on both coasts of South America; the nominate race restricted to the northern part of the range including the Galapagos Islands and northern South America; on the Peninsula principally in Yucatán and Quintana Roo, including Isla Cozumel (Griscom, 1926b); once recorded from southern Campeche (Traylor, 1941).

SPECIMENS. Yucatán—Santa Clara, 1 ♀, Aug. 17, 1951, 1 ♂, Dec. 8, 1952.

HABITAT. Shallow coastal lagoons and bays.

REMARKS. One of the last strongholds of this race is on the Yucatán Peninsula. Recently the National Audubon Society has concerned itself with protecting the population and has succeeded in gaining the cooperation of the owners of the breeding sites in the Río Lagartos area of Yucatán. Although the local inhabitants have become informed of the need to protect the species, there must be occasions when it is still hunted for sport or for food, since Legters has found shot birds washed ashore at Santa Clara.

Mr. Robert P. Allen, who is conducting a survey of the species for the National Audubon Society, informed me (*in litt.*) that approximately 4000 breeding adults are known to be in the Yucatán population. In the nonbreeding season Mr. Allen said the entire flock might be found at Celestún, but I believe that a more general dispersal is the rule. On December 5, 1950, I saw a flock of about 80 birds on a sandbar a short distance east of Santa Clara and on December 9 there were 129 birds, 45 of which

were immature, in the lagoon behind El Cuyo. When the Celestún area was visited in mid-January 1951, several days were spent working on the lagoon from its mouth to five kilometers inland, but no more than 200 birds were seen. It is possible that the main flock was even farther within the lagoon, although the local people assured me that no more birds were present.

The possibility that a sizable portion of the population may still winter, or even breed, on Isla Cozumel should not be overlooked. When Griscom (1926b) visited the island in February 1926, he saw 600 flamingos in the north lagoon and was told that they wintered there regularly and that a few nonbreeding birds remained in the summer. Apparently no ornithologist has visited this area of Cozumel since then, but I was told by the inhabitants that flamingos continue to winter there every year. Nothing was known of the status of the population in the summer.

I have seen no flamingos on the coast of Quintana Roo, but everywhere I went I heard reports of their presence in small numbers during the winter in the Bahía de la Ascensión district. Griscom (1926a) also was told stories of this nature during his visit and saw eight birds.

BREEDING. I have never seen the species nesting and for this account I must rely on reports from the local people and a brief outline generously provided by Mr. Allen (*in litt.*).

The only known breeding grounds are in the vicinity of Río Lagartos, but a few birds may occasionally breed at Celestún. Breeding usually begins in June after the level of the water in La Ciénaga has risen due to the start of the rainy season. Storms, abnormally high tides, and variations in the beginning of the rains may destroy the colony or delay nesting. Dispersal from the colony begins shortly after the young can fly.

Family ANATIDAE

DENDROCYGNA AUTUMNALIS AUTUMNALIS (Linnaeus).

Black-bellied Tree-Duck. Pichichi.

Anas autumnalis Linnaeus, Syst. Nat., ed. 10, 1:127, 1758. (West Indies.)

RANGE. The species occurs from Texas through Middle America, the Antilles, and Trinidad to Ecuador and northern Argentina; the race from extreme southern Texas to Panama; *D. a. discolor* in the Antilles, Trinidad, and South America; on the Peninsula known from Yucatán (Hellmayr and Conover, 1948a) and Quintana Roo (sight record), including Isla Cozumel (Salvin, 1889).

HABITAT. Coastal lagoons and occasionally inland on bodies of fresh water.

REMARKS. On the basis of the evaluations presented by Hellmayr and Conover (1948a) and Pitelka (1948), there appears no reason to recognize

D. a. fulgens and *D. a. lucida* described by Friedmann (1947) from Mexico.

The species is not uncommon in northern Yucatán where it is found in La Ciénaga. Elsewhere it is rare, presumably because of the scarcity of ponds and lakes.

A few birds were seen on a lake 15 kilometers northwest of Kantunil-Kín in late December 1950. This appears to be the first record of the species from the mainland of Quintana Roo.

CAIRINA MOSCHATA (Linnaeus).

Muscovy. Pato Real.

Anas moschata Linnaeus, Syst. Nat., ed. 10, 1:124, 1758. (Brazil.)

RANGE. Found from Mexico through Central America and tropical South America to northern Argentina; recorded from Yucatán (Friedmann, Griscom, and Moore, 1950) and Quintana Roo (sight record), including Isla Cozumel (Salvin, 1889).

HABITAT. Ponds and lakes.

REMARKS. The lack of suitable habitats restricts the distribution of the species on the Yucatán Peninsula.

I saw a few Muscovys on Laguna Chacanbacab during my visits in 1949 and 1951. It is reported by the local people to be present on Laguna Bacalar and on the small lakes to the north of it.

ANAS DISCORS Linnaeus.

Blue-winged Teal.

Anas discors Linnaeus, Syst. Nat., ed. 12, 1:205, 1766. (North America [= Virginia or Carolina].)

RANGE. Breeds from central Canada through most of the United States; winters from the southern United States, and the West Indies, to northern South America; recorded from Campeche (Friedmann, Griscom, and Moore, 1950), Yucatán and Quintana Roo, including Isla Mujeres (Salvadori, 1895), Isla Cozumel (Salvin, 1889), and Banco Chinchorro (sight record).

SPECIMENS. Quintana Roo—15 km. NW. Kantunil-Kín, 2♀, Jan. 1, 1951. Yucatán—Celestún, 1♀, Jan. 12, 1951; Santa Clara, 1♂, Oct. 22, 1♂, Oct. 26, 1946, 1♂, Nov. 4, 1♂, Nov. 6, 1950, 2♂, Sept. 22, 1951, 1♀, Oct. 9, 1♂, Oct. 13, 1952.

HABITAT. Coastal lagoons and occasionally inland on bodies of fresh water.

REMARKS. The Blue-winged Teal is one of the most common of the ducks wintering on the Peninsula.

Since 1947, the United States Fish and Wildlife Service has conducted

aerial surveys of ducks wintering in Mexico. During January, one or two days are spent flying over the coastal lagoons of Yucatán estimating the number present of each species. Dr. G. B. Saunders has kindly given me an unpublished list of these estimates.

During the six censuses, from 1947 to 1952, the number of wintering Blue-winged Teal has ranged from a low of about 5000 in 1948 to over 110,000 in 1952.

The species is not very common inland, but I have seen small flocks at the lake near Kantunil-Kín in 1950-51, and at Laguna Chacanbacab in 1951.

In late November 1940, when Wetmore (1944a) was on a ship passing through the Yucatán Channel, out of sight of land, a group of Blue-winged Teal was seen passing from west to east, apparently migrating from Yucatán to Cuba. A migration route of this nature would not be unexpected in the spring, but it is curious that there should be such a movement when the ducks are usually established on their wintering grounds.

ANAS CRECCA CAROLINENSIS Gmelin.
Green-winged Teal.

Anas carolinensis Gmelin, Syst. Nat., 1:533, 1789. (Carolina to Hudson Bay.)

RANGE. The species breeds in much of Europe, Asia, and North America; the race from northern Alaska and Canada south to California, northern New Mexico and southern Minnesota; winters in the southern United States, the West Indies, Mexico, Central America, and extreme northern South America; on the Peninsula known only from Yucatán.

SPECIMEN. Yucatán—Santa Clara, 1♀, Nov. 4, 1950.

HABITAT. Coastal lagoons of northern Yucatán.

REMARKS. It is curious that this specimen is the first taken on the Peninsula and that not even a published sight record can be found.

During the Fish and Wildlife aerial surveys from 1947 to 1952 the species was seen three of the six years (Saunders, *in litt.*). Well over 12,000 were noted in 1947, about 800 in 1948, and less than 200 in 1952. The fact that they were not seen during three years does not, of course, mean that the species was not present, but it does indicate a great annual variation in abundance.

ANAS ACUTA Linnaeus.
Pintail. Sak Tsem.

Anas acuta Linnaeus, Syst. Nat., ed. 10, 1:126, 1758. (Sweden.)

RANGE. Breeds in North America from Alaska to southern California and east to Hudson Bay and Illinois; also over much of northern Europe

and Asia; North American birds winter south to extreme northern South America and in the West Indies; recorded from throughout the Peninsula (Friedmann, Griscom, and Moore, 1950).

SPECIMENS. Yucatán—Celestún, 1 ♀, Jan. 13, 1951; Santa Clara, 1 ♀, Nov. 17, 1 ♂, Nov. 19, 1951, 1 ♂, Jan. 17, 1 ♂, Jan. 18, 1953.

HABITAT. Coastal lagoons.

REMARKS. Although the "Check-list of Mexican Birds" (Friedmann, Griscom, and Moore, 1950) listed the species as a winter visitant throughout Mexico, I have never observed it in Quintana Roo, or seen published records of specimens collected anywhere on the Peninsula, with the exception of one bird banded in California and recovered 35 miles south of Isla del Carmen (McLean, 1950). Probably the listing of Quintana Roo in the Check-list is substantiated by unpublished data.

During the period from 1947 to 1952, the Fish and Wildlife aerial reconnaissances found populations in January in the lagoons of northern Yucatán to range from approximately 13,000 birds to over 52,000 (Saunders, *in litt.*).

ANAS AMERICANA Gmelin.
Baldpate.

Anas americana Gmelin, Syst. Nat., 1:526, 1789. (New York.)

RANGE. Breeds from Alaska east to Hudson Bay and south to South Dakota and northern California; winters from British Columbia and New York south over much of the United States, Mexico, and Central America, occasionally to Panama and the West Indies; peninsular records only from Yucatán.

SPECIMENS. Yucatán—Celestún, 1 ♂, Jan. 12, 1951; Santa Clara, 1 ♂, Oct. 29, 1951.

HABITAT. Coastal lagoons of northern Yucatán.

REMARKS. Saunders (*in litt.*) reported as many as 52,000 during the January aerial censuses from 1947 to 1952.

ANAS STREPERA Linnaeus.
Gadwall.

Anas strepera Linnaeus, Syst. Nat., ed. 10, 1:125, 1758. (Sweden.)

RANGE. Breeds in Alaska, and from British Columbia east to Hudson Bay and south to Wisconsin, Kansas, and California; also in temperate Europe and Asia; North American birds winter from British Columbia and Chesapeake Bay through much of the southern United States, and in Mexico; rarely in the Greater Antilles; sight records from Yucatán (Saunders, *in litt.*).

HABITAT. Coastal lagoons of northern Yucatán.

REMARKS. The Fish and Wildlife Service aerial surveys afford the first records of this species from the Peninsula. In 1947 and 1948 less than 100 were seen, in 1949 nearly 500, none in 1950, over 11,000 in 1951, and about 1000 in 1952 (Saunders, *in litt.*).

ANAS CLYPEATA Linnaeus.
Northern Shoveller.

Anas clypeata Linnaeus, Syst. Nat., ed. 10, 1:124, 1758. (Sweden.)

RANGE. Breeds in eastern North America from Mackenzie south to central California and northern New Mexico, and east to Kansas and Indiana; also in Europe and Asia; North American population winters from Puget Sound, the lower Mississippi Valley and Chesapeake Bay to the West Indies, Mexico, and Central America to Honduras; occasionally to Colombia; known on the Peninsula only from Quintana Roo (Stoudt, 1949) and Yucatán.

SPECIMEN. Yucatán—Celestún, 1 ♀, Jan. 12, 1951.

HABITAT. Coastal lagoons of northern Yucatán.

REMARKS. This specimen appears to be the second taken on the Peninsula, although aerial surveys from 1947 to 1952 have revealed a wintering population in four of the six years. These have ranged from less than 200 birds in 1947 and 1948, to over 12,000 in 1951 (Saunders, *in litt.*).

The first specimen from the Peninsula was a young female banded in Alberta and recovered in Quintana Roo (Stoudt, 1949).

AYTHYA VALISINERIA (Wilson).
Canvasback.

Anas valisineria Wilson, Am. Ornith., 8:103, 1814. (Eastern United States.)

RANGE. Breeds from Alaska, southern Mackenzie, and central Manitoba, south to northern New Mexico and southern Nebraska; winters from British Columbia, Colorado, Arkansas, and Chesapeake Bay, south through much of Mexico, and casually to Guatemala and Cuba; sight records from Yucatán (Saunders, *in litt.*).

HABITAT. Coastal lagoons of northern Yucatán.

REMARKS. The only records of this species on the Peninsula were obtained by the Fish and Wildlife surveys, when approximately 2000 birds were seen in January 1947 and 1949 (Saunders, *in litt.*).

AYTHYA AMERICANA (Eyton).
Redhead.

Fuligula americana Eyton, Monogr. Anatidae, p. 155, 1838. (North America.)

RANGE. Breeds from British Columbia east to central Manitoba and south to southern California, New Mexico, and Wisconsin; winters from southern British Columbia, Arizona, Arkansas, and Chesapeake Bay southward, occasionally to the Greater Antilles, to central Mexico, and to the Yucatán Peninsula where once seen in Yucatán (Saunders, *in litt.*).

HABITAT. Coastal lagoons of northern Yucatán.

REMARKS. In January 1949, approximately 200 Redheads were seen in Yucatán by the Fish and Wildlife Service aerial survey (Saunders, *in litt.*).

AYTHYA COLLARIS (Donovan).
Ring-necked Duck.

Anas collaris Donovan, Brit. Birds, 6, pl. 147, 1809. (Lincolnshire, England.)

RANGE. Breeds locally in Canada from British Columbia east to Manitoba, and recently east to Nova Scotia; in the United States south to northern California, Arizona, Utah, and southern Wisconsin, and recently in Maine and Pennsylvania; winters from southern British Columbia, New Mexico, Arkansas, and Chesapeake Bay, south to Guatemala, and occasionally to the West Indies; sight records on the Peninsula from Yucatán (Saunders, *in litt.*) and Quintana Roo (Griscom, 1926a).

HABITAT. Coastal lagoons of northern Yucatán and eastern Quintana Roo.

REMARKS. The first record of this species was obtained in 1926 near Chunyaxche, where two birds were seen (Griscom, 1926a).

Although this species often rafts with the Lesser Scaup, making aerial censusing difficult or impossible, as many as 37,000 have been recorded in a single census in northern Yucatán during the years 1947 to 1952 (Saunders, *in litt.*).

AYTHYA AFFINIS (Eyton).
Lesser Scaup.

Fuligula affinis Eyton, Monogr. Anatidae, p. 157, 1838. (North America.)

RANGE. Breeds from central Alaska east to Hudson Bay and south to Oregon, Utah, Iowa, and Wisconsin; winters from British Columbia, Arizona, Arkansas, Illinois, and Chesapeake Bay, south to northern Colombia, and in the Antilles; recorded from the Peninsula in Yucatán and Quintana Roo.

SPECIMENS. Quintana Roo—20 km. NW. Chetumal, 1 ♀, Nov. 14, 1948. Yucatán—Santa Clara, 1 ♂, 1 ♀, Nov. 6, 1951, 1 ♀, May 15, 1952.

HABITAT. Chiefly in bays and coastal lagoons but occasionally inland on lakes, and even in roadside ditches.

REMARKS. Large rafts of Lesser Scaup are common sights along the northern and eastern coasts of the Peninsula. They have not been recorded from Campeche but undoubtedly they winter in Laguna de Términos, the one notably suitable locality on the western side of the Peninsula.

Between 1947 and 1952, aerial surveys have indicated winter populations of Lesser Scaup ranging from 17,000 to over 200,000 individuals in northern Yucatán (Saunders, *in litt.*).

The specimen which was obtained at Santa Clara on May 15 is in very abraded plumage. It probably was unable to fly well, if at all, thus explaining this unusually late record.

BUCEPHALA ALBEOLA (Linnaeus).

Bufflehead.

Anas albeola Linnaeus, Syst. Nat., ed. 10, 1:124, 1758. (Newfoundland.)

RANGE. Breeds from central Alaska east to Ontario and south to northern California, Wyoming, and Iowa; winters in the United States from Lake Michigan east to Maine and southward; straggler in Cuba and Puerto Rico, and casual in Mexico; sight record from Yucatán (Saunders, *in litt.*).

HABITAT. Coastal lagoons of northern Yucatán.

REMARKS. In January 1948, five Buffleheads were noted by the Fish and Wildlife Service aerial survey in Yucatán (Saunders, *in litt.*). It is doubtful that the species is ever numerous or regular in its occurrence on the Peninsula.

OXYURA JAMAICENSIS JAMAICENSIS (Gmelin).

Ruddy Duck.

Anas jamaicensis Gmelin, Syst. Nat. 1:519, 1789. (Jamaica.)

RANGE. The species breeds from British Columbia east to Manitoba and south to central Baja California, southern Texas, and Illinois, and in the Antilles; reappears in the Andes of Colombia; the race throughout the northern range; winters from both coasts of the United States south to Costa Rica; one sight record from Yucatán (Saunders, *in litt.*).

HABITAT. Known only from coastal lagoons of northern Yucatán.

REMARKS. Saunders (*in litt.*) reported that nearly 200 birds were seen during the aerial census of 1947.

Family CATHARTIDAE

SARCORAMPHUS PAPA (Linnaeus).

King Vulture. Zopilote Rey.

Vultur papa Linnaeus, Syst. Nat., ed. 10, 1:86, 1758. (Surinam.)

RANGE. Resident from central Mexico to northern Argentina; collected in Quintana Roo and sight records from Campeche.

SPECIMEN. Quintana Roo—Km. 25, Chetumal-Bacalar Road, 1 ♀, Mar. 12, 1952.

HABITAT. Rain forest of southern third of the Peninsula.

REMARKS. The King Vulture is relatively rare on the Peninsula. It appears to be more common in Campeche than in Quintana Roo. Traylor (1941) saw it at Matamoros and near Pacaytun, and I observed lone birds soaring near Aguada Seca on several days and a single bird feeding on carrion, with a flock of Black Vultures, a few kilometers west of Pixoyal.

CORAGYPS ATRATUS (Bechstein).

Black Vulture. Zopilote Negro. Ch'om.

Vultur atratus Bechstein, in Latham, Allg. Uebers. Vögel, 1:655, 1793. (St. John's River, Florida.)

RANGE. Occurs in the eastern United States from Maryland and Kansas southward, and through Middle America and South America to central Chile and Argentina; sight records from throughout the mainland of the Peninsula, and on Islas Holbox, Contoy, and Cozumel.

HABITAT. Found principally, and ubiquitously, in the vicinity of human populations; uncommon in unsettled areas.

REMARKS. The Black Vulture was not seen on Isla Mujeres, although there is a sizable town present and *Cathartes aura* was quite common. The absence of *C. atratus* on Mujeres is even more notable because it was fairly common on Isla Contoy, which is farther out to sea and is tenanted only by the families of the lighthouse keepers.

CATHARTES AURA AURA (Linnaeus).

Turkey Vulture. Zopilote. Ch'om.

Vultur aura Linnaeus, Syst. Nat., ed. 10, 1:86, 1758. (Veracruz.)

RANGE. The species ranges from Ontario to extreme southern South America; northern birds winter south to Panama; the race from southeastern Texas, southern Florida, the Bahamas, and some of the Greater Antilles,

through Middle America to northern Colombia; sight records from throughout the Peninsula, and on the islands of Holbox, Contoy, Mujeres, Cozumel, and Culebra; the race *C. a. septentrionalis* to the north; *C. a. teter* considered invalid (*vide*, Amadon, 1949).

SPECIMEN. Quintana Roo—Cayo Culebra, 1 ♀, April 4, 1949.

HABITAT. Common in clearings in the forest; seldom in or near towns.

REMARKS. The Turkey Vulture is never so abundant as *Coragyps atratus*, but it is not uncommon away from towns.

For a time during the spring Turkey Vultures increase in number, apparently owing to a northward movement of birds wintering farther south. Van Tyne and Trautman (1945) have recorded flights passing over central Yucatán, and also birds leaving the northern coast and heading out over the Gulf.

In April, on Cayo Culebra, there appeared to be many more vultures than could be supported by so small an island. Since a number of passerine migrants were noted, it was presumed Turkey Vultures were also migrating and a specimen was collected. It proved to have a slightly enlarged ovary and is referable to the nominate race. Apparently a resident bird was collected rather than a migrant.

While it is possible that all the migrants are of the nominate race, this appears improbable in view of their northerly line of flight (Van Tyne and Trautman, 1945) which, if adhered to, would bring them to the Gulf Coast of the United States, where *C. a. septentrionalis* occurs.

The collection of migrants should add another race to the known avifauna of the Peninsula.

Family ACCIPITRIDAE

ELANUS LEUCURUS MAJUSCULUS Bangs and Penard. White-tailed Kite.

Elanus leucurus majusculus Bangs and Penard, New Eng. Zool. Club, Proc., 7:46, 1920. (San Rafael, California.)

RANGE. The species has an interrupted distribution, residing locally in the southern United States, Baja California, and southeastern Mexico and recurring in South America from Venezuela south to central Chile, Argentina, and Uruguay; the race breeds locally from central California to northern Baja California, in Oklahoma, Texas, and Florida, and through southeastern Mexico to the extreme southern part of the Yucatán Peninsula; resident in Campeche (Brodkorb, 1943a) and probably in Quintana Roo; migrates south to Guatemala and British Honduras.

SPECIMEN. Quintana Roo—Km. 21, Chetumal-Bacalar Road, 1 ♀, April 6, 1952.

HABITAT. Vicinity of fresh water.

REMARKS. The species is extremely rare on the Peninsula. The only known specimen from Quintana Roo was collected by Baeza.

BREEDING. Brodkorb (1943a) collected an adult and two immatures at Palizada in late July. There is little doubt that they were hatched in the vicinity.

Unfortunately, no note was made of the condition of the ovary of the specimen from Quintana Roo. It may have been a migrant, but in view of the breeding record from Campeche, it would not be unexpected if it were a resident bird.

ELANOÏDES FORFICATUS YETAPA (Vieillot).
Swallow-tailed Kite.

Milvus yetapa Vieillot, Nouv. Dict. Hist. Nat., 20:564, 1816. (Paraguay.)

RANGE. The species breeds from the southeastern United States to northeastern Argentina; the nominate race breeds very locally in the United States and occurs as a migrant southward to Ecuador; winter range imperfectly known; *E. f. yetapa* breeds from extreme southern Mexico southward over the remainder of the range; probably absent from Mexico and Central America in winter; three records from the Peninsula: one from Campeche, which establishes the species as a breeding form in Mexico (Friedmann, 1950), one sight record from Campeche (Traylor, 1941), and one from Quintana Roo.

REMARKS. The record from Campeche (Friedmann, 1950) is apparently based upon a specimen not previously recorded in the literature.

On March 19, 1949, two kites were seen a few kilometers west of Carrillo Puerto. Migrants might be expected at that time of the year, but the birds were moving in an easterly direction and are presumed to have been residents.

BREEDING. Friedmann (1950) presented no further data on the breeding specimen recorded by him from Campeche.

A gravid female was collected in Petén in early April (Van Tyne, 1935). The nesting season is probably the same on the Peninsula.

LEPTODON CAYANENSIS (Latham).
Gray-headed Kite.

Falco cayanensis Latham, Ind. Ornith., 1:28, 1790. (Cayenne.)

RANGE. Resident from northeastern Mexico through Central America and south over much of South America to northern Argentina; recorded from throughout the Peninsula.

SPECIMENS. Quintana Roo—Chetumal, 1 ♀, Feb. 26, 1949; Km. 21, Chetumal-Bacalar Road, 1 ♂, Apr. 7, 1952; Carrillo Puerto, 1 ♂, June 15, 1950. Yucatán—Santa Clara, 1 ♀, Nov. 30, 1951. Campeche—Champotón, 1 ♀, Jan. 27, 1951.

HABITAT. Although Friedmann, Griscom, and Moore (1950) implied that this species occurs solely in marshes, only the specimen from Santa Clara was collected within several miles of water. The remaining specimens were taken in rain forest. The choice of habitat, of course, may differ where water is more commonly available.

REMARKS. The only previous record of this species on the Peninsula is from Yucatán (Boucard, 1883).

The specimen from Carrillo Puerto is in subadult plumage; those from Chetumal and Santa Clara are dark phase juvenals; the remaining two are light phase juvenals.

The under-wing coverts of the adult are unbarred. Brodkorb (1943a) contended that *L. c. mexicanus* is a valid northern race and that the absence of barring on the under-wing coverts is one of its characters. Pure black under-wing coverts have also been noted in a specimen from Veracruz (Lowery and Dalquest, 1951). Nevertheless, neither Friedmann (1950) nor Hellmayr and Conover (1949) were able to find consistency in the color characters attributed to the race.

The wing and tail of the subadult measure 300.0 and 229.0 respectively; those characters in the immature male are 309.0 and 255.0; in the immature females from Chetumal, Santa Clara, and Champotón the wings measure 314.0, 305.0, and 300.0, and the tails 260.0, 252.0, and 251.0 millimeters respectively.

The stomach of the bird from Campeche contained a large lizard.

CHONDROHIERAX UNCINATUS AQUILONIS Friedmann.
Hooked-billed Kite.

Chondrohierax uncinatus aquilonis Friedmann, Wash. Acad. Sci., Jour., 24:314, 1934. (Tamaulipas.)

RANGE. The species occurs from northern Mexico to northern Argentina, and also on Grenada; the northern limits of the races are poorly known; *C. u. aquilonis* appears to occur from northeastern Mexico south to the Yucatán Peninsula where found in Campeche (Traylor, 1941), Quintana Roo, and Yucatán; the nominate race from Sinaloa and Guerrero, south to northern Argentina.

SPECIMENS. Quintana Roo—Isla Tamalcab, 1 ♀, Dec. 12, 1948; Bacalar, 1 ♂, Feb. 16, 1952; Chetumal, 1 ♀, Oct. 26, 1952.

HABITAT. Chiefly in marshy areas. Once, however, found in abundance at Chichén Itzá (Traylor, 1941).

REMARKS. The range of the race is very poorly understood and the pub-

lished accounts are often contradictory. In describing the race, Friedmann (1934) excluded Oaxaca, Chiapas, the Yucatán Peninsula, and Guatemala from the range, placing specimens from these localities within the nominate form. Later (1950) he placed Oaxaca, Chiapas, and the Peninsula within the range of *C. u. aquilonis*. The "Check-list of the Birds of Mexico" (Friedmann, Griscom, and Moore, 1950) follows the latter treatment. On the other hand, Traylor (1941) identified his large series from Yucatán and Campeche as belonging to the typical form, and Hellmayr and Conover (1949) also considered the Peninsular specimens as examples of the nominate race.

Without a large series from throughout Mexico it is not possible to venture an opinion as to the ranges of the races there. It does seem, however, that the Oaxaca-Chiapas area needs careful investigation, for if *C. u. aquilonis* is found in those two states, the nominate form would occur as an isolated unit in northwestern Mexico and reappear south of Mexico. Such an interrupted distribution of a race is unexpected.

With only three specimens from the Peninsula at hand, of which the male is in the gray phase while one female is in the brown phase, and the other in juvenal plumage, it seems that Friedmann, Griscom, and Moore's treatment (1950) of Peninsular birds as *C. u. aquilonis* is correct. The females are no aid to racial identification, but the white ventral bands of the male—the principal character of the race—average about 0.5 millimeter in width.

I never found the species common on the Peninsula. Apparently it is locally abundant and its discovery is a matter of chance. Traylor found it numerous at Chichén Itzá, which is surprising, because the area is devoid of marshes and the only water is found in a few *cenotes*.

HARPAGUS BIDENTATUS FASCIATUS Lawrence.

Double-toothed Kite.

Harpagus fasciatus Lawrence, Acad. Nat. Sci. Phila., Proc., 20:429, 1868 (-1869). (Guatemala.)

RANGE. The species ranges from southern Mexico through Central America, Trinidad, and South America to Brazil; the race from Veracruz and Oaxaca south to Ecuador; one record from Quintana Roo.

SPECIMEN. Quintana Roo—Xcan, 1 ♂, Apr. 10, 1952.

HABITAT. I have never seen the species on the Peninsula. However, the bird was collected in a region of relatively high rain forest.

REMARKS. This kite is particularly uncommon north of Panama. The specimen, which was collected by Legters, is the first record of the species from the Yucatán Peninsula.

ICTINIA PLUMBEA (Gmelin).
Plumbeous Kite.

Falco plumbea Gmelin, Syst. Nat., 1:283, 1788. (Cayenne.)

RANGE. Breeds from Tamaulipas southward through Central and South America to northern Argentina; probably does not winter north of Guatemala; known from Yucatán (Boucard, 1883) and Quintana Roo.

SPECIMENS. Quintana Roo—Km. 24, Chetumal-Bacalar Road, 1♂, 1♀, May 24, 1952; Tabi, 1♂, 1♀, Mar. 30, 1♂, Mar. 31, 1953; Kantunil-Kín, 1♂, 1♀, Apr. 24, 1949.

HABITAT. Rain forest.

REMARKS. Kantunil-Kín is the only locality where I saw the species. It appears to be more common in the higher and wetter forests farther south on the Peninsula, since Peters (1913), Baeza, and Legters collected a number of specimens there.

BREEDING. The pair of birds from Kantunil-Kín, collected on April 24, had a nest about 12 meters from the ground near the end of a limb of a large tree in a rather dense forest. The male was incubating a single egg which contained an embryo about one-third developed.

The shell is white with a few small dark brown spots of irregular shape and size, concentrated on one side, giving the impression that it is soiled. The shape is nearly elliptic; one axis measures 36.0 and the other 44.0 millimeters.

ROSTRHAMUS SOCIABILIS MAJOR Nelson and Goldman.
Snail Kite.

Rostrhamus sociabilis major Nelson and Goldman, Biol. Soc. Wash., Proc., 46:193, 1933. (Catemaco, Veracruz.)

RANGE. The species is found from Florida, Cuba, and eastern Mexico to central Argentina; the race locally in Veracruz, and at the base of the Peninsula in Campeche (Traylor, 1941) and Quintana Roo; *R. s. plumbeus* and *R. s. levis* in Florida and Cuba respectively; the nominate race for the remainder of the range.

SPECIMENS. Quintana Roo—Bacalar, 1♂, Feb. 14, 1952; Xulha, 1♀ (? Apr.), 1952.

HABITAT. Fresh-water marshes.

REMARKS. These specimens represent an easterly extension of over 300 kilometers to the known range of the race. It had been collected on the Peninsula previously in Campeche at Palizada and El Vapor (Brodkorb, 1943a), and at Pacaytun (Traylor, 1941).

Neither specimen was collected by me, but I have seen the species on a few occasions at Laguna Bacalar and nowhere else on the Peninsula.

The male is a juvenal and the female is in subadult plumage. The exposed culmens of both specimens measure 29.5 millimeters, clearly referring them to this large-billed form.

ACCIPITER BICOLOR BICOLOR (Vieillot).
Bicolored Hawk.

Sparvius bicolor Vieillot, Nouv. Dict. Hist. Nat., 10:325, 1816. (Cayenne.)

RANGE. The species occurs from southern Mexico to extreme southern South America; the race from Yucatán (Traylor, 1941), Quintana Roo, and Campeche, to northern Brazil and eastern Bolivia; *A. b. fidens* in Veracruz and Oaxaca.

SPECIMENS. Quintana Roo—Tabi, 1 ♂, Mar. 14, 1949. Campeche—2 km. N. Aguada Seca, 1 ♂, 1 ♀, Feb. 6, 1951.

HABITAT. Appears to prefer forest edges and *milpas* where there are a few dead trees, which are used as vantage points.

REMARKS. The specimens from Campeche constitute the first record of this species from that state.

The species is not common although seen fairly regularly.

BREEDING. The specimen taken in Quintana Roo in mid-March had enlarged gonads. The two from Campeche were not in breeding condition, although they were paired.

WEIGHT. The male and female Campeche specimens weighed 249.6 and 453.6 grams, respectively.

ACCIPITER COOPERII (Bonaparte).
Cooper Hawk.

Falco cooperii Bonaparte, Am. Ornith., 2:1, 1828. (Near Bordentown, New Jersey.)

RANGE. A monotypic species breeding from southern Canada southward over the United States to northwestern Mexico; winters from the northern United States south to Costa Rica; one record from Yucatán.

SPECIMEN. Yucatán—Dzidzantún, 1 ♂, Mar. 4, 1953.

HABITAT. Known only from the coastal scrub of northern Yucatán.

REMARKS. Cooper Hawks have not been reported before from the Peninsula. It is presumedly a rare visitant or, more probably, merely a transient.

ACCIPITER STRIATUS VELOX (Wilson).
Sharp-shinned Hawk.

Falco velox Wilson, Am. Ornith., 5:116, 1812. (Near Philadelphia, Pennsylvania.)

RANGE. The species breeds from Alaska through much of Canada, the United States, Mexico, the Greater Antilles, Central America, and South America to Bolivia and Brazil; the race in the northern portion of the range south to the southern United States; winters south to Panama; on the Peninsula in Yucatán (Boucard, 1883) and one record from Isla Desterrada, Arrecife Alacrán (Siebenaler, 1954); three races resident in highlands of Mexico and seven in the remainder of the range.

HABITAT. The known records of this species are from the deciduous forest of Yucatán, with the exception of one insular record. It is doubtful that it winters in the more dense forest farther south.

REMARKS. The Sharp-shinned Hawk is a rare visitant on the Peninsula. Since neither Legters nor I have seen it, in spite of intensive work in the region, it may be irregular in its occurrence.

Siebenaler (1954) saw a lone hawk, which was obviously a trans-Gulf migrant, on Isla Desterrada on October 5, 1952.

BUTEO ALBICAUDATUS HYPOSPODIUS Gurney.
White-tailed Hawk.

Buteo hyospodius Gurney, Ibis, 18:73, 1876. (Medellín, Colombia.)

RANGE. The species is found from southern Texas and Arizona south to central Argentina; the race from the northern limits of the species south to northern Colombia and western Venezuela; three records from Yucatán.

SPECIMENS. Yucatán—Dzidzantún, 1 ♂, Nov. 30, 1951, 1 ♀, Oct. 17, 1952.

HABITAT. The only records are from the low deciduous forest and scrub of northern Yucatán. This is the preferred habitat of the species throughout its range.

REMARKS. These specimens are in juvenal plumage. They are the second and third records of the species from the Peninsula; the first was collected nearly 90 years ago at Mérida (Lawrence, 1869).

A northward migration of White-tailed Hawks has been noted in Veracruz in the spring (Wetmore, 1943). This suggests that the scarcity of records on the Peninsula of this usually conspicuous bird may possibly be because it is a rare visitant, rather than a resident.

BUTEO JAMAICENSIS subsp.
Red-tailed Hawk.

RANGE. The species breeds from Alaska and Canada south to Panama and the West Indies, and possibly in Chile; numerous races throughout the range; geographic limits of many forms poorly known; their winter ranges even less understood; one indeterminable record from Yucatán (Lawrence, 1869).

REMARKS. A specimen described by Lawrence (1869) as *Buteo borealis* var. *montanus* was collected near Mérida.

The whereabouts of this specimen is unknown to me and apparently was not seen by Friedmann (1950) who tentatively placed the record under the form *B. j. calurus*, a race not recognized by Hellmayr and Conover (1949).

In the "Check-list of the Birds of Mexico" (Friedmann, Griscom, and Moore, 1950) this record was also placed under *B. j. calurus*, but without notation as to whether the specimen had been examined, or whether it was merely believed probable that the race winters in Yucatán.

Until the specimen is re-examined, or until another one is collected, it seems unwarranted to cite any given race as wintering on the Peninsula.

BUTEO MAGNIROSTRIS CONSPECTUS (Peters).
Roadside Hawk. Ch'uy.

Rupornis magnirostris conspecta Peters, Auk, 30:370, 1913. (San Ignacio, Yucatán.)

RANGE. The species occurs from northeastern Mexico south to central Argentina; highly polymorphic and divisible into approximately 15 subspecies of which five or six occur in Mexico; typical *B. m. conspectus* confined to northern Yucatán; all of Quintana Roo (and probably the remainder of Yucatán), and northern and central Campeche occupied by an inconsistent intermediate population referred to *B. m. conspectus*; *B. m. direptor* adjoins in southern Campeche, and in Guatemala and British Honduras; *B. m. gracilis* confined to Isla Cozumel and Isla Holbox.

SPECIMENS. Quintana Roo—Chetumal, 1♂, Nov. 8, 1♀, Nov. 11, 1♂, Nov. 12, 1♂, Dec. 27, 1948, 1♂, Jan. 20, 1949; Isla Tamalcab, 1♀, Dec. 12, 1948; Km. 21, Chetumal-Bacalar Road, 1♀, May 14, 1952; Laguna Chacabacab, 1♂, May 16, 1949; 24 km. NW. Xtocomo, 1♀, Feb. 24, 1951; Bacalar, 1♂, 1♀, Feb. 12, 1952; Carrillo Puerto, 1♂, Apr. 5, 1949, 1♂, June 12, 1♂, June 16, 1950; Tabi, 1♀, Mar. 27, 1♂, Apr. 3, 1953; Vigía Chico, 1♀, Mar. 30, 1949; Xcan, 1♂, Apr. 26, 1949; Kantunil-Kín, 1♀, Apr. 24, 1949; 15 km. NW. Kantunil-Kín, Jan. 1, 1951. Yucatán—Dzidzantún, 1♂, Aug. 1, 1952; Xocempich, 1♂, Sept. 27, 1952.

HABITAT. Clearings, open second growth, and coastal scrub.

REMARKS. *B. m. conspectus* was described from the dry, deciduous,

scrubby area of extreme northern Yucatán. Essentially, it is a paler and grayer form of *B. m. griseocauda*, which ranges from the northern limits of the species south to Tabasco.

B. m. direptor, which is found from southern Campeche south through Guatemala, and probably in most of British Honduras, to El Salvador, is as dark dorsally as *B. m. griseocauda* but the lower half or third of its tail is conspicuously marked with tawny, rendering the race readily distinguishable from either *B. m. griseocauda* or *B. m. conspectus*.

Specimens from Chichén Itzá, Xocempich, Río Lagartos, Dzidzantún, etc., i.e., localities in the scrub or low deciduous forest of northern Yucatán, are all pale grayish birds, typical of *B. m. conspectus*. Specimens from the higher forest of the Peninsula, however, even in extreme northern Quintana Roo, show an approach to *B. m. direptor* in various and irregular degrees.

For example, the hawk collected 15 kilometers northwest of Kantunil-Kín, Quintana Roo, has a considerable amount of tawny on its tail and is between *B. m. conspectus* and *B. m. direptor* in the coloration of its dorsal and ventral surfaces. On the other hand, a specimen from the village of Kantunil-Kín, a mere 15 kilometers away, is typical of *B. m. conspectus* except for a trace of tawny on the tail.

The same type of variation can be found in the specimens from southern Quintana Roo; a few are almost typical of *B. m. direptor*, while the majority show characters of both races to a greater or lesser degree, but with no consistency. One specimen may have a very tawny tail and generally light coloration, while another has but a trace of tawny on the tail and is dark plumaged.

I have seen no specimens from northern or central Campeche, but without doubt the same phenomenon will be found there, since Traylor (1941) noticed variability in his specimens from southern Campeche but placed them in *B. m. direptor* because they were closer to that race than the typical Yucatán form.

It is apparent, therefore, that typical *B. m. conspectus* has a relatively limited range in the drier northern portion of Yucatán. In the higher forest of the Peninsula there is a population which is neither typical *B. m. conspectus* nor typical *B. m. direptor*; the change appears to be inconsistent and abrupt, rather than clinal.

It is obvious that placing the vast intermediate population in either race is subjective, and that in doing so the phenomenon is obscured. Nevertheless, naming of such an inconsistent population, even though large, would be inappropriate since a trinomial in this instance would not have the significance usually inferred, and thus would be further misleading. For taxonomic expediency then, it is appropriate to apply one of the existing names to the population. Although a few individuals are obviously close to *B. m. direptor*, the general tone of the series from the higher forest is that of paleness and grayness and therefore will be called *B. m. direptor*.

BREEDING. The first specimen exhibiting indications of reproductive

activity was collected in late March. My latest record is mid-May. The season may extend even longer, however, but the summer specimens were not collected by me and no record was made of the condition of the gonads of these birds.

WEIGHT. Three adult males weighed 249.5, 268.8, and 269.0 grams. A nonbreeding adult female weighed 318.0 and a breeding female only 231.3 grams; the latter is in worn plumage, but did not appear diseased or injured.

BUTEO MAGNIROSTRIS GRACILIS (Ridgway).

Rupornis gracilis Ridgway, U. S. Nat'l Mus., Proc., 8:94, 1885. (Isla Cozumel, Quintana Roo.)

RANGE. Endemic to Isla Cozumel, and to Isla Holbox (Hellmayr and Conover, 1949); sight record from Banco Chinchorro (subsp.?).

SPECIMENS. Quintana Roo—Isla Cozumel, 1♂, Jan. 5, 1♀, Jan. 6, 1♀, Jan. 7, 1♀, Jan. 9, 2♂, Jan. 12, 1949, 1♂, June 5, 1952.

HABITAT. Clearings, open second growth, and insular scrub.

REMARKS. The adults of this race, as is often typical of insular forms, retain to some extent the streaked ventral markings characteristic of the juvenal plumage.

I did not see the species on Isla Holbox but Hellmayr and Conover (1949) examined a specimen from there and found it indistinguishable from those of Cozumel.

The small peninsula jutting from the northern coast of Quintana Roo, inappropriately called "Isla" Meco, has been included within the range of *B. m. gracilis* by Friedmann (1950) and Friedmann, Griscom, and Moore (1950). It is merely a mangrove-covered extension from the mainland and it is not surprising that Hellmayr and Conover (1949) found a specimen from there to be referable to *B. m. conspectus*.

I have not seen this species on Isla Mujeres and there is apparently no record of it having been found there. Peters and Griscom (1929) suggested that *B. m. gracilis* probably occurs on that island, and subsequent authors have included Isla Mujeres within the probable range of the race. While it is possible that it occurs there in spite of my failure to see it during a prolonged visit, it seems hardly appropriate to include Isla Mujeres within the hypothetical range of the species, much less in that of the race *B. m. gracilis*.

A single bird was seen on Cayo Centro, Banco Chinchorro, in February 1949. Its subspecific identity is, of course, uncertain; the record is merely included under the insular race for convenience.

WEIGHT. An adult and two juvenal males weighed 189.0, 161.5, and 168.9 grams respectively. Two adults and one juvenal female weighed 216.8, 234.0, and 199.2 grams respectively.

BUTEO MAGNIROSTRIS DIREPTOR (Peters and Griscom).

Rupornis magnirostris direptor Peters and Griscom, New Eng. Zool. Club, Proc., 11:46, 1929. (Finca El Cipres, near Mazatenango, Guatemala.)

RANGE. The race is resident from southern Campeche through Guatemala and probably all of British Honduras, with the possible exception of the extreme northern part, to El Salvador.

SPECIMEN. Campeche—2 km. N. Aguada Seca, 1 ♀, Feb. 10, 1951.

HABITAT. Clearings and open second growth.

REMARKS. This specimen is nearly as dark above as *B. m. griseocauda* and has a considerable amount of tawny on its tail. While not quite typical of *B. m. direptor*, it is closer to that race than to *B. m. conspectus*.

Traylor (1941) collected a series at Pacaytun, exhibiting the same characteristics as my specimen, which he placed in *B. m. direptor*. Hellmayr and Conover (1949) confirmed this identification.

The limits of the northward extension of the race in Campeche are not known. Presumably, it will be found that a short distance north of Pacaytun and Aguada Seca the population is as diverse as that of Quintana Roo.

WEIGHT. The specimen, a fully adult bird, weighed 314.0 grams.

BUTEO BRACHYURUS Vieillot.

Short-tailed Hawk.

Buteo brachyurus Vieillot, Nouv. Dict. Hist. Nat. 4:477, 1816. (Cayenne.)

RANGE. The species breeds in southern Florida, possibly in eastern Mexico, and locally, in Central and South America to northern Argentina; one record from Isla Cozumel (Ridgway, 1885); Yucatán and the mainland of Quintana Roo dubiously included in its range.

REMARKS. The only record I have been able to discover is that of a young male collected on Isla Cozumel (Ridgway, 1885).

Friedmann (1950) included Yucatán within the range and Friedmann, Griscom, and Moore (1950, p. 57) stated, “. . . Yucatán, and Quintana Roo, including Cozumel Island.”

Although there may have been available to these authors unpublished records from Yucatán and the mainland of Quintana Roo, I suspect that the inclusion of these two areas is an error. At the time Ridgway's paper was published (1885) the Territory of Quintana Roo did not exist and specimens from Isla Cozumel were listed as “Cozumel, Yucatán.” The failure to revise these records in accordance with the modern political divisions of the Peninsula would explain the inclusion of Yucatán within the range. The implication by Friedmann, Griscom, and Moore (1950) that

the species is found on the mainland of Quintana Roo is probably a *lapsus calami*.

BUTEO NITIDUS PLAGIATUS (Schlegel).
Gray Hawk.

Asturina plagiata Schlegel, Mus. Pays-Bas, 2, Asturinae, p. 1, 1862. (Veracruz, Veracruz.)

RANGE. The species ranges from extreme southern United States to northern Argentina and southern Brazil; the race from southern Texas, southwestern New Mexico, and southern Arizona to northwestern Costa Rica; found throughout the Peninsula.

SPECIMENS. Quintana Roo—Km. 25, Chetumal-Bacalar Road, 1♂, Mar. 12, 1952; Km. 22, Chetumal-Bacalar Road, 1♀, Mar. 20, 1952; Laguna Chichancanab, 1♂, Mar. 11, 1951; 15 km. NW. Kantunil-Kin, 1♀, Jan. 1, 1951. Yucatán—Santa Clara, 1♂, Oct. 20, 1951. Campeche—Seibaplaya, 1♀, Sept. 23, 1950.

HABITAT. Clearings and open second growth.

REMARKS. Hellmayr and Conover (1949) have presented evidence which appears to indicate conclusively that *B. n. maximus* and *B. n. micrus*, of northern and southern Mexico respectively, are untenable.

This species is fairly common, but much less abundant than *B. magnirostris*, a hawk of similar habitat. A puzzling feature is that fully adult-plumaged birds are rarely seen. The only specimen in this series which is in mature plumage is the bird taken near Kantunil-Kin; the three specimens collected in March have small areas of gray feathers on their throats.

BREEDING. Nothing is known of the breeding season on the Peninsula, but the adult female taken in January had a slightly enlarged ovary and the juvenal male collected at Laguna Chichancanab in mid-March had a slightly enlarged left testis, while the right testis was small. The fact that the three birds taken in March all were assuming the adult plumage may indicate that breeding begins in April or May, since it is doubtful that they breed when in juvenal plumage. On the other hand, the indication of sexual activity noted in the adult female as early as January points either to a prolonged season or possibly extreme irregularity.

WEIGHT. The adult female weighed 398.0 grams and the juvenal male from Laguna Chichancanab 398.0 grams.

HYPOMORPHNUS URUBITINGA RIDGWAYI (Gurney).
Great Black Hawk.

Urubitinga ridgwayi Gurney, List Diurn. Bds. Prey, p. 148, 1884. (Guatemala.)

RANGE. The species occurs from Mexico to Argentina; the race from southern Tamaulipas and Sonora through Mexico, including the entire Yucatán Peninsula, and Central America to Panama.

SPECIMENS. Quintana Roo—24 km. NW. Xtocomo, 1♀, Feb. 26, 1951. Yucatán—Santa Clara, 1♀, Aug. 29, 1950; 1♀, Apr. 11, 1953; Celestún, 1♂, Jan. 12, 1951. Campeche—2 km. N. Aguada Seca, 1♂, Feb. 10, 1951.

HABITAT. Vicinity of fresh water and in sheltered, wooded, coastal localities.

REMARKS. This species is relatively uncommon owing to the lack of suitable habitats.

BREEDING. A female taken in late February exhibited the first indication of breeding.

WEIGHT. A mature male and female weighed 853.6 and 965.4 grams respectively.

BUTEOGALLUS ANTHRACINUS ANTHRACINUS (W. Deppe).
Common Black Hawk.

Falco anthracinus W. Deppe, Preis.-Verz. Mex. Vogel, p. 3, 1830. (Mexico.)

RANGE. The species ranges from the extreme southern United States to northern South America and the Lesser Antilles; the race from southern Texas and Arizona through Mexico and Central America to Panama; on the Peninsula in Yucatán and Quintana Roo, including Isla Cozumel (Salvin, 1889), Isla Holbox (sight record), Isla Mujeres (sight record), and Cayo Culebra (sight record).

SPECIMENS. Quintana Roo—Vigía Chico, 1♀, Mar. 30, 1949. Yucatán—Celestún, 1♂, Jan. 12, 1951.

HABITAT. Coastal, usually in mangroves.

REMARKS. The Common Black Hawk is ubiquitous in many localities. Although no specimens were secured, its identification was certain on Isla Holbox, Isla Mujeres, and Cayo Culebra.

The absence of records from Campeche is probably only because collectors have seldom worked along the coast. The Río Champotón appears eminently suitable for the species, but none was seen during a short time spent on the river.

BUSARELLUS NIGRICOLLIS NIGRICOLLIS (Latham).
Black-collared Hawk.

Falco nigracollis Latham, Ind. Ornith., 1:35, 1790. (Cayenne.)

RANGE. The species is local from Mexico to northern Argentina; the race from Sinaloa and Veracruz to southern Brazil; on the Peninsula in Campeche (Brodkorb, 1943a); sight records from Isla Holbox, Laguna Bacalar, and Laguna Chacabacab, Quintana Roo.

HABITAT. Usually near fresh water, but occasionally coastal.

REMARKS. The only specimen from the Peninsula was taken at Palizada (Brodkorb, 1943a).

On December 20, 1950, a bird definitely identifiable as this species was seen on Isla Holbox. My local assistant has seen it a few times at Laguna Bacalar, but I had doubted his identification until we saw the hawk on Holbox, and he assured me it was the same as those he had observed in southern Quintana Roo. In mid-February 1951, while at Laguna Chacabacab, another of this species was seen by my assistant. Knowing the extreme accuracy of his observations, which have proven correct time and again, I feel no hesitancy in accepting his sight records of this distinctive hawk.

HARPIA HARPYJA (Linnaeus).
Harpy Eagle.

Vultur harpyja Linnaeus, Syst. Nat., ed. 10, 1:86, 1758. (Mexico.)

RANGE. Uncommon from southern Mexico to Costa Rica but more common from Panama to southern Brazil; a sight record from Campeche (Friedmann, Griscom, and Moore, 1950).

REMARKS. Friedmann, Griscom, and Moore (1950, p. 60) listed a sight record from "(50 miles west of city of Campeche)." Obviously, this should have been either "east" or "south," unless the bird was seen at sea, which would be most improbable.

SPIZASTUR MELANOLEUCUS (Vieillot).
Black and White Eagle-Hawk.

Buteo melanoleucus Vieillot, Nouv. Dict. Hist. Nat., 4:482, 1816. (Guiana.)

RANGE. Rare resident from Veracruz and Oaxaca through Central America, becoming less uncommon in South America, where occurs south to northern Argentina; recorded from Yucatán (Boucard, 1883).

REMARKS. The species has not been collected or seen on the Peninsula in over 60 years. A specimen was collected in 1879 at Tizimín (Boucard, 1883) and there are two doubtful sight records from central Yucatán (Stone, 1890).

The fact that this is a species of dense forests makes it appear probable that further work in Campeche and Quintana Roo will reveal its presence there.

SPIZAËTUS ORNATUS VICARIUS Friedmann.
Ornate Eagle-Hawk.

Spizaëtus ornatus vicarius Friedmann, Wash. Acad. Sci., Jour., 25:451, 1935.
(Manatee Lagoon, British Honduras.)

RANGE. The species occurs from eastern Mexico to northern Argentina; the race from Tamaulipas and Veracruz southward through Central America to Colombia and Ecuador, and possibly Peru; on the Peninsula in Yucatán (sight record, Traylor, 1941), Quintana Roo, and Campeche (Traylor, 1941).

SPECIMENS. Quintana Roo—Laguna Chacabacab, 1 ♀, May 11, 1949; 46 km. W. Chetumal, 1 ♀, Feb. 26, 1949; Km. 21, Chetumal-Bacalar Road, 1 ♀, Mar. 29, 1952; 24 km. NW. Xtocomo, 1 ♂, Feb. 27, 1951; Ch'ich', 1 ♀, May 10, 1950; 15 km. NW. Kantunil-Kín, 1 ♀, Dec. 14, 1950.

HABITAT. Heavy rain forest.

REMARKS. The collection of a specimen by Traylor (1941) at Pacaytun, Campeche, first established this species as an element of the avifauna of the Peninsula.

It is the most common of the very large hawks in Quintana Roo, although it is not an abundant species, by any standard. It is fairly easy to approach and about half of those seen were collected.

The bird taken near Kantunil-Kín had recently fed on a skunk.

BREEDING. The female from Ch'ich', which was collected on May 10, was incubating.

WEIGHT. A juvenal male weighed 1035.0 and an adult female 1432.0 grams, which is approximately the same as a female collected by Van Tyne (1935) in Petén.

SPIZAËTUS TYRANNUS SERUS Friedmann.
Black Eagle-Hawk.

Spizaëtus tyrannus serus Friedmann, Smiths. Misc. Coll., 111 (16):1, 1950.
(Canal Zone, Panama.)

RANGE. The species is resident locally from central Mexico through Central America to northeastern Argentina; the race from San Luis Potosí southward over the entire range, except in eastern Brazil, and possibly northeastern Argentina; twice recorded on the Peninsula; once from Campeche (Traylor, 1941) and once from Quintana Roo.

SPECIMEN. Quintana Roo—90 km. W. Chetumal, 1 ♀, Mar. 1, 1951.

HABITAT. Dense rain forest.

REMARKS. The specimen collected is the only one which I have seen on

the Peninsula. It was perched high in a dead tree at the side of the recently constructed road which passes through the dense forest at the base of the Peninsula.

CIRCUS CYANEUS HUDSONIUS (Linnaeus).
Marsh Hawk.

Falco hudsonius Linnaeus, Syst. Nat., ed. 12, 1:128, 1766. (Hudson Bay.)

RANGE. The species is distributed widely throughout the world; the race breeds in North America from northwestern Alaska east to Newfoundland and through all but the southeastern United States, to northern Baja California; winters south through Mexico and Central America, and casually to Colombia and the West Indies; collected in Yucatán and sight records from Quintana Roo.

SPECIMEN. Yucatán—Dzidzantún, 1 ♀, Nov. 30, 1951.

HABITAT. Found principally in the *henequén* fields and low scrub of central and northern Yucatán.

REMARKS. During the winter months Marsh Hawks are seen regularly throughout the *henequén* district of Yucatán and less frequently in the belt of scrub along the coast.

In Quintana Roo I have seen the species only a few times in the savanna behind Vigía Chico and at the lake near Kantunil-Kín. Griscom (1926a) also recorded it from Chunyaxche.

There are few suitable areas in Campeche, except in the southwestern part of the state, where it is to be expected.

GERANOSPIZA CAERULESCENS NIGRA (Du Bus).
Blackish Crane-Hawk.

Ischnosceles niger Du Bus, Acad. Roy. Soc. Belg., Bull. 14:102, 1847. (Mexico.)

RANGE. The species is found from Mexico to northern Argentina; the race from Sinaloa and Tamaulipas to Panama; on the Peninsula in Yucatán (Salvin and Godman, 1899) and Quintana Roo; a little-known race in Sonora.

SPECIMEN. Quintana Roo—5 km. NW. Vigía Chico, 1 ♂, Apr. 8, 1949.

HABITAT. Heavy forest, usually near water.

REMARKS. This hawk is among the rarest on the Peninsula. The only one I have seen is the specimen collected, but there are several early records from Yucatán (Stone, 1890, Salvin and Godman, 1899), and one record from "Isla" Meco, Quintana Roo (Salvin, 1889).

Family PANDIONIDAE

PANDION HALIAETUS CAROLINENSIS (Gmelin).
Osprey. Gavilán Pescador.

Falco carolinensis Gmelin, Syst. Nat., 1:263, 1788. (Carolina.)

RANGE. The species is of nearly cosmopolitan distribution; the race breeds from northwestern Alaska east to Newfoundland and south through the United States to western Mexico, and, at least formerly, to Guatemala; winters from the southern United States through Mexico, the West Indies, and South America to Argentina; collected on Isla Holbox, Quintana Roo (Hellmayr and Conover, 1949) and in Yucatán; sight records from throughout the Peninsula including Isla Cozumel, Banco Chinchorro, and Vigía Chico, Quintana Roo; *P. h. ridgwayi* in the Bahamas, eastern coast of the Yucatán Peninsula, and British Honduras.

SPECIMEN. Yucatán—Celestún, 1 ♂, Jan. 13, 1951.

HABITAT. Coastal and insular.

REMARKS. The collection of this specimen apparently represents the second of the race taken on the Peninsula and the first from Yucatán.

The first specimen was collected on Isla Holbox (Salvin, 1889) and has been identified by Hellmayr and Conover (1949) as *P. h. carolinensis*.

Friedmann, Griscom, and Moore (1950) have included both Yucatán and Quintana Roo in their list. The Yucatán record is presumably based on Salvin's (1889) single specimen, or on Griscom's (1926a) sight records, both of which refer to Quintana Roo, and is the result of confusing the modern political divisions of the Peninsula, rather than an indication of a record antedating the one from Celestún.

During the winter months Ospreys are to be seen in considerable numbers on the Peninsula and on some of its islands. Within a distance of 8 kilometers along the road running north from Champotón, I have seen as many as ten birds on each of several days during late January. At Celestún, at least four were seen daily during early January. All of these birds had conspicuously dark heads and are referable, without doubt, to *P. h. carolinensis*.

Several dark-headed Ospreys were seen on Isla Holbox in late December 1950, one at Vigía Chico on March 29 and 30, 1949, and one on Cayo Centro, Banco Chinchorro, on February 5, 1949.

The bird seen on Isla Cozumel (Salvin, 1889), may have been *P. h. ridgwayi* but, in view of the abundance of the northern form, it seems best to place it here.

PANDION HALIAËTUS RIDGWAYI Maynard.

Pandion ridgwayi (*sic*) Anonymous (= Maynard), Am. Exch. and Mart, 3, no. 3, 1887. (Andros Island, Bahamas.)

RANGE. The race breeds on the Bahama Islands, on the cays off northern Cuba, on the coast of Quintana Roo (Griscom, 1926a), and on the islands off British Honduras.

HABITAT. Coastal and insular.

REMARKS. The only specimen of this race collected on the Peninsula was taken by Griscom at Boca de Paila (Griscom, 1926a).

I have identified this race, with certainty, only at Cayo Culebra, where, on April 5, 1949, a single bird flew overhead and its white head could be seen distinctly.

Griscom (1926a) saw several, however, in Bahía Ascensión and at Boca de Paila.

BREEDING. Three occupied nests were found by Griscom (1926a) in late January and early February.

Family FALCONIDAE

HERPETOTHERES CACHINNANS CACHINNANS (Linnaeus).

Laughing Falcon. Huaco. Kos.

Falco cachinnans Linnaeus, Syst. Nat., ed. 10, 1:90, 1758. (Surinam.)

RANGE. The species ranges from Mexico to northern Argentina; the race from eastern and western Mexico southward throughout the range, except for southwestern Panama, western Colombia, and Ecuador; recorded from Yucatán (Chapman, 1896), Campeche (Traylor, 1941), and Quintana Roo.

SPECIMENS. Quintana Roo—Estero Franco, 1 ♀, Jan. 25, 1949; Carrillo Puerto, 1 ♂, Apr. 5, 1 ♀, Apr. —, 1949.

HABITAT. Primarily a species of deciduous forest and its edges; absent from dense rain forest, coastal scrub, and islands, but occurs within the rain forest region if clearings are available.

REMARKS. I concur with Griscom (1932), and Hellmayr and Conover (1949) that *H. c. ridgwayi* cannot be recognized. Even the three specimens from Quintana are not alike; the ventral surface of the specimen from Estero Franco is nearly pure white, while in those from Carrillo Puerto it is distinctly buffy in one and intermediate in coloration in the other.

BREEDING. The female from Estero Franco was in breeding condition in late January. The condition of the gonads in the other specimens was not recorded.

MICRASTUR SEMITORQUATUS NASO (Lesson).
Collared Forest-Falcon.

Carnifex naso Lesson, *Écho du Monde Savant*, 46, col. 1085, 1842. (Realejo, Nicaragua.)

RANGE. The species occurs from Mexico to northern Argentina; the race from Sinaloa and Tamaulipas south to eastern Panama, western Colombia, and Ecuador; on the Peninsula in Quintana Roo (Friedmann, 1950), Campeche (Traylor, 1941), and Yucatán.

SPECIMEN. Yucatán—Xocempich, 1 ♂, Sept. 26, 1952.

HABITAT. In both heavy deciduous and rain forest.

REMARKS. This species has not been observed by me on the Peninsula.

It is possible that it is less abundant than formerly and is now almost restricted to the southern part of the Peninsula. Cabot (1844) found several in the vicinity of a *cenote* at Chichén Itzá and Cole (1906) was equally successful in the same locality. However, none was taken there by Traylor (1941) during his lengthy visit, and Legters, who has sent me specimens from that general area for more than four years, has collected it only once. The reduction of this falcon in the Chichén Itzá region is undoubtedly caused by the removal of the forests surrounding the ruins.

A specimen from Puerto Morelos is referred to Yucatán by Friedmann (1950), but it must be from Quintana Roo since the only town by that name on the Peninsula is there.

MICRASTUR RUFICOLLIS GUERILLA Cassin.
Barred Forest-Falcon.

Micrastur guerilla Cassin, *Acad. Nat. Sci. Phila., Proc.*, 4:87, 1848. (Jalapa, Veracruz.)

RANGE. The species ranges from south-central Mexico to northern Argentina; the race from Puebla south to Panama, western Colombia, and western Ecuador; known on the Peninsula from Quintana Roo and Campeche.

SPECIMENS. Quintana Roo—24 km. NW. Xtocomo, 1 ♂, Feb. 24, 1951; near Bacalar 1 ♀, —, 1951. Campeche—2 km. N. Aguada Seca, 1 ♂, Feb. 5, 1951.

HABITAT. Dense rain forest of the southern portion of the Peninsula.

REMARKS. Friedmann, Griscom, and Moore (1950) included Yucatán within the range of the species but I can find no published record from there. Even Friedmann (1950) did not specify Yucatán in the distribution, although he did include a previously unpublished record from La Tuxtepeña, Campeche. In Friedmann's bibliography of the race (1950, p. 576) Traylor's record from Pacaytun, Campeche, (1941) is erroneously cited as being from Yucatán. Apparently when compiling their check-list, Friedmann,

Griscom, and Moore (1950) inadvertently accepted this faulty citation.

This falcon is not uncommon in southern Quintana Roo and Campeche. So few specimens have been collected it would seem to indicate that it is a rare form, but I have heard at least one bird calling in every locality visited in the heavy forest. It is seldom seen and very difficult to approach.

The specimen from near Xtocomo was taken in a trammel net when it attempted to remove a small bird which had been caught and was calling vigorously.

Two of the birds are adult and the one with few data is a juvenal. This last bird was collected by my assistant during my absence from the Peninsula. The collector's tag was lost but it is certain that the bird was taken in the vicinity of Bacalar.

Hellmayr and Conover (1949) do not admit *M. r. interstes*, claimed to range from Costa Rica to Ecuador, because they were unable to find consistency in its alleged characters, viz., heavier barring on the underparts, particularly on the lower abdomen and under-tail coverts, and grayish interstices.

The two adults from the Peninsula are markedly different from one another. The bird from Quintana Roo is more lightly barred ventrally; the interstices are almost white; the lower abdomen is nearly clear, with only a few faint bars; the under-tail coverts have a few narrow bars; and the head, back, and upper-tail coverts are very dark gray. In contrast, the specimen from Campeche is more heavily barred ventrally, the interstices are pale gray; the lower abdomen is more lightly barred than the rest of the underparts, but still distinctly marked; the under-tail coverts are heavily barred; and the head, back, and upper-tail coverts are distinctly tinged with mummy brown.

There is little doubt that these two specimens uphold the contention of Hellmayr and Conover (1949) that the northern population of the species is too variable to warrant subspecific division.

BREEDING. The testes of the bird taken in late February were just becoming active.

WEIGHT. The adult male from Quintana Roo weighed 191.0; the one from Campeche 169.0 grams.

POLYBORUS PLANCUS AUDUBONII Cassin.

Crested Caracara. Quebrantahuesos.

Polyborus audubonii Cassin, Acad. Nat. Sci. Phila., Proc., 17:2, 1865. (Florida.)

RANGE. The species ranges from the southern United States to Tierra del Fuego; the race from Florida, Texas, and Arizona, Cuba and the Isle of Pines, south through Middle America to western Panama; Peninsular records from Yucatán and Campeche; a race on the islands of Las Tres Mariás off western Mexico.

SPECIMENS. Yucatán—Santa Clara, 1?, Sept. 11, 1950. Campeche—Champotón, 1♂, Sept. 23, 1950.

HABITAT. Arid northwestern tip of Yucatán and occasionally along the coast of Campeche.

REMARKS. The Caracara is common in the low scrub of the barrier bar of northern Yucatán. It is seldom seen farther inland although it has been recorded from as far south as Izamal (Salvin and Godman, 1901).

The specimen from Campeche is the first record from that state. I have seen it a few times along the coastal road from Ciudad Campeche to Champotón.

FALCO PEREGRINUS ANATUM Bonaparte.

Peregrine Falcon.

Falco anatum Bonaparte, Georg. and Comp. List Bds. Eur. and No. Am., p. 4, 1838. (Great Egg Harbor, New Jersey.)

RANGE. The species is of cosmopolitan distribution; the race breeds from Alaska east to Baffin Island and Greenland, and southward, but locally, through much of the United States to Baja California; winters south to the Antilles and South America; sight record from Banco Chinchorro, Quintana Roo (Griscom, 1926b) and a specimen from Campeche.

SPECIMEN. Campeche—Champotón, 1 wing, Jan. 23, 1951.

HABITAT. Coastal and insular.

REMARKS. The first record of this species from the Peninsula was obtained by Griscom (1926a) who saw two birds on Banco Chinchorro in January, 1926.

On January 23, 1951, I found the tail and wings of a Peregrine Falcon hung on a pole in a *milpa* at Champotón. Obviously it had been there for some time, since the body had disappeared. Presumably it had been shot by a farmer and hung there to protect his cornfield from the ravages of birds during the growing season.

Yucatán is cited within the range of the species by Friedmann, Griscom, and Moore (1950). Once again this is assumed to be the result of an erroneous citation in the bibliography of the species in Friedmann's work (1950, p. 659), since Griscom's record (1926a) is listed as "Chinchorro Bank, Yucatán."

FALCO RUFIGULARIS PETOENSIS Chubb.

Bat Falcon. E'pi'.

Falco rufigularis petoensis Chubb, Brit. Ornith. Club, Bull., 39:22, 1918. (Peto, Yucatán.)

RANGE. The species is resident from Mexico to northern Argentina; the race from Tamaulipas and Sonora to Colombia and Ecuador; found throughout the Peninsula.

SPECIMENS. Quintana Roo—Chetumal, 1♂, Dec. 4, 1948; Tabi, 1♀, Mar. 8, 1949; Ch'ich', 1♂, 1♀, May 8, 1950. Yucatán—Xocempich, 1♀, Oct. 3, 1952. Campeche—2 km. N. Aguada Seca, 1♀, Feb. 9, 1951.

HABITAT. Forest edges.

REMARKS. Almost everywhere in the forested region of the Peninsula these falcons may be found perched on conspicuous dead trees near or in clearings. They are particularly common in abandoned *milpas*.

BREEDING. A nesting pair has been recorded in early February in Quintana Roo (Griscom, 1926a) and mating has been noted on March 1 in Yucatán (Cole, 1906). Specimens collected in February and March had enlarged gonads. The pair taken on May 8 was incubating.

WEIGHT. The male and female weighed 127.8 and 208.8 grams respectively. In Petén, Van Tyne (1935) collected a male which weighed 140 and a female which weighed 195 grams.

FALCO FEMORALIS SEPTENTRIONALIS Todd.

Aplomado Falcon.

Falco fusco-coerulescens septentrionalis Todd, Biol. Soc. Wash., Proc., 29:98, 1916. (Fort Huachuca, Arizona.)

RANGE. The species ranges locally from southwestern United States to Tierra del Fuego; the race breeds from southern Texas, New Mexico, and Arizona to southern Mexico; records from Guatemala and Nicaragua probably migrants; on the Peninsula twice recorded from Yucatán; the nominate race from British Honduras (once) and Panama south over greater part of South America.

SPECIMEN. Yucatán—Santa Clara, 1♂, Sept. 5, 1950.

HABITAT. Specimen taken in low coastal scrub.

REMARKS. This specimen, from the Legters collection, is the first taken in Yucatán since Cabot collected one over a century ago (Boucard, 1883).

The wing measures 274.0, the tail 178.5, and the culmen, from the cere, 18.0 millimeters, placing it without question in the northern race.

FALCO COLUMBARIUS BENDIREI Swann.

Pigeon Hawk.

Falco columbarius bendirei Swann, Brit. Ornith. Club, Bull., 42:66, 1922. (Fort Walla Walla, Washington.)

RANGE. The species breeds throughout most of the Northern Hemisphere; the race from northern Saskatchewan west to Alaska and south to Oregon; winter range poorly known but recorded south to central Mexico and on the Peninsula only with certainty from Isla Cozumel (Long, 1934); im-

mature specimens from Isla Cozumel, Isla Mujeres, and Yucatán, and a sight record from Cayo Culebra not determinable; contiguous races in the breeding area are *F. c. columbarius* to the east and south and *F. c. richardsonii* to the west and south.

SPECIMEN. Yucatán—Santa Clara, 1 ♀, Nov. 2, 1951.

HABITAT. All known records are from coastal or insular localities.

REMARKS. Previously the species had been known only from Isla Mujeres and Isla Cozumel (Salvin, 1889; Long, 1934). The inclusion of Yucatán in the "Check-list of the Birds of Mexico" (Friedmann, Griscom, and Moore, 1950) is presumably based on the erroneous citation by Friedmann (1950, p. 694) of, "Nugeres (*sic*) and Cozumel Islands, Yucatán."

On April 5 and 6, 1949, a Pigeon Hawk was seen on Cayo Culebra, but it could not be collected.

Dr. Harrison B. Tordoff has kindly re-examined the two specimens in the Museum of Natural History, University of Kansas, which were collected on Isla Cozumel by Gaumer, and which were identified by Long (1934) as *F. c. bendirei*. Dr. Tordoff reports (*in litt.*) that one specimen is an adult, presumably a male from its measurements, and definitely referable to *F. c. bendirei*. The other specimen is an immature bird, a female judging from its size, which cannot be subspecifically identified, although J. L. Peters had written on the label "*F. c. bendirei*."

I have examined the two specimens, one from Isla Cozumel and one from Isla Mujeres, which are in the British Museum. Both specimens are immature and both are unsexed, but because of their small size can be safely called males. They appear to be either *F. c. columbarius* or *F. c. bendirei*, but which race it is cannot be determined judiciously.

Although the nominate form is to be expected on the Peninsula, only *F. c. bendirei* has been recorded definitely.

FALCO SPARVERIUS SPARVERIUS Linnaeus. Sparrow Hawk.

Falco sparverius Linnaeus, Syst. Nat., ed. 10, 1:90, 1758. (Carolina.)

RANGE. The species breeds throughout much of North America, the Antilles, Guatemala, and South America; the race from Alaska east to Newfoundland and south to California, Texas, northern Alabama and North Carolina; possibly in western Mexico south to Guerrero; winters south to Panama; visitant throughout the Peninsula, including Islas Contoy and Mujeres (sight records); contiguous races in Baja California and Chiapas.

SPECIMENS. Quintana Roo—Chetumal, 1 ♀, Nov. 20, 2 ♀, Nov. 21, 1948, 1 ♀, May 29, 1950; Ucum, 1 ♂, Feb. 25, 1952; Carrillo Puerto, 1 ♀, Apr. 10, 1949; Tulum, 1 ♂, Jan. 13, 1949. Yucatán—Mérida, 2 ♂, Oct. 20, 1950; Xocempich, 1 ♂, Nov. 4, 1949, 1 ♂, Oct. 9, 1951; Temax, 1 ♀, Oct. 5, 1951; Baca, 1 ♀, Jan. 18, 1950.

HABITAT. Open country.

REMARKS. A single Sparrow Hawk was seen on both Isla Mujeres and Isla Contoy in late December. These are the only insular records known to me.

The presence of the Sparrow Hawk in Quintana Roo as late as May 29 is particularly noteworthy. The specimen was collected by Baeza, who apparently was not aware of the significance of so late an observation, and who failed to record the condition of the gonads. It is, however, very doubtful that the species breeds on the Peninsula.

Van Tyne and Trautman (1945) found migrants leaving the shore of northern Yucatán in early April. In 1949 I did not see the species after mid-April, but this may not be significant, since field work for several weeks after this date was conducted in areas of unsuitable habitats.

WEIGHT. A male weighed 97.2; four females 86.0, 99.0, 106.0, and 117.0 grams.

Family CRACIDAE

CRAX RUBRA RUBRA Linnaeus.

Great Curassow. Fisán Real. K'ambul. Bolonchan.

Crax rubra Linnaeus, Syst. Nat., ed. 10, 1:157, 1758. (Western Ecuador.)

RANGE. The species ranges from Tamaulipas and San Luis Potosí through southern Mexico and Central America to Colombia and Ecuador; the race throughout the range, with the exception of Isla Cozumel; on the Peninsula in Campeche (Ridgway and Friedmann, 1946) and Quintana Roo.

SPECIMENS. Quintana Roo—Near Bacalar, 1 chick, July 24, 1951; Ucum, 1♀, Feb. 25, 1952; 46 km. W. Chetumal, 1♂, Feb. 16, 1949; Laguna Chacanbacab, 1♂, Mar. 15, 1949.

HABITAT. Rain forest.

REMARKS. The curassow is fairly abundant in the undisturbed areas of southern Quintana Roo and Campeche. It is present in extreme northern Quintana Roo, and possibly in the adjacent areas of northeastern Yucatán.

The barred-back phase is very rare, but nearly every local hunter can recall having seen a few during his lifetime. It is considered a distinct species by the Mayas and known as *Bolonchan*.

BREEDING. The local people said that the species breeds in the spring; my only evidence of breeding is the chick, which is in early postnatal molt, taken in late July.

CRAX RUBRA GRISCOMI Nelson.

Crax globicera griscomi Nelson, Biol. Soc. Wash., Proc., 39:106, 1926. (Isla Cozumel, Quintana Roo.)

RANGE. Endemic to Isla Cozumel.

HABITAT. Since the island now supports no rain forest, this race must exist in moderately high deciduous forest.

REMARKS. During my visit to Cozumel I made numerous inquiries regarding the existence of this small race, but I could find no one who knew that the *Fisán* had ever occurred on the island. From this I assumed that it had been exterminated.

Recently, however, I was told that after a hurricane a single bird was found close to the village of San Miguel. The exact year is not known but it must have been in 1950 or 1951. Hurricanes always approach from the east and there is little doubt that the bird seen was one from the island, rather than a stray carried from the mainland.

If the race has not already disappeared it must be on the very brink of extinction. Since almost the entire human population of the island is confined to the village of San Miguel, the remainder of the island is little disturbed, except for an occasional hunter. While the curassow may have decreased for other reasons, it is possible that even light hunting pressure has been enough to reduce it to such small numbers. Some effort should be made immediately to curtail completely the killing of this species.

The International Union for the Protection of Nature should be commended for having recently added this race to its Provisional List of Threatened Bird Species (1952).

PENELOPE PURPURASCENS PURPURASCENS Wagler.
Crested Guan. Cojolito. Kox.

Penelope purpurascens Wagler, Isis, col. 1110, 1830. (Mexico [probably Veracruz].)

RANGE. The species is resident from Mexico through Central America to Colombia and Venezuela; the race from Tamaulipas and Sinaloa to Honduras; recorded from Yucatán (Boucard, 1883), Campeche (Traylor, 1941), and Quintana Roo.

SPECIMENS. Quintana Roo—Ucum, 1 ♀, 1 ♂, Feb. 23, 1952; 46 km. W. Chetumal, 1 ♂, Feb. 13, 1 ♂, 1 ♀, Feb. 19, 1949; Laguna Chacabacab, 1 ♂, May 11, 1949; Xcan, 1 chick, June 6, 1951.

HABITAT. Rain forest.

REMARKS. The guan, like the curassow, is fairly numerous in the forest of southern Campeche and through much of Quintana Roo. In Yucatán, however, it is confined to the northwestern corner of the state, an area now occupied by several large lumber mills. In this region Gaumer (Boucard, 1883) recorded prodigious numbers of guans 75 years ago, but I have never seen one alive there, and have found only few piles of feathers left by hunters. Unless measures are taken to control hunting, the species will be exterminated in Yucatán, and even in northern Quintana Roo where the lumber companies are now actively at work.

Guans are more often seen than curassows and are probably the more numerous species. It is possible, though, that because guans are more

arboreal than curassows, and frequently remain perched in trees in the manner of chachalacas, their apparent greater abundance is simply because they are more easily seen.

BREEDING. The chick taken in early June is the only evidence of breeding available. In Petén, however, breeding was noted in late April (Van Tyne, 1935) and presumably the season is similar on the Peninsula.

ORTALIS VETULA INTERMEDIA Peters.
Plain Chachalaca. Chachalaca. Bach.

Ortalis vetula intermedia Peters, Auk, 30:371, 1913. (Camp Mengel [= Alvaro Obregón], Río Hondo, Quintana Roo.)

RANGE. The species ranges from southern Texas to northern Nicaragua; the race in Campeche, Quintana Roo, and Petén; *O. v. pallidiventris* contiguous to the north, *O. v. plumbiceps* to the south, and *O. v. vetula* to the west.

SPECIMENS. Quintana Roo—Chetumal, 1♂, Feb. 5, 1952; 46 km. W. Chetumal, 1♂, Feb. 14, 1949; Ucum, 1♂, Feb. 21, 1952; Laguna Chacanbacab, 1♂, Feb. 14, 1951; 24 km. NW. Xtocomo, 1♂, 1♀, Feb. 23, 1951; Estero Franco, 1♂, 1♀, Jan. 26, 1♂, 1♀, Jan. 27, 1949; Carrillo Puerto, 1♂, Apr. 27, 1950; Vigía Chico, 1♀, Mar. 30, 1949; Tabi, 1♂, Mar. 11, 1♀, Mar. 12, 1♂, Mar. 16, 1949, 1♂, Apr. 1, 1953; 15 km. NW. Kantunil-Kín, 1♂, 1♀, Dec. 30, 1950. Campeche—2 km. N. Aguada Seca, 1♀, Feb. 9, 1951.

HABITAT. Found primarily in forest edges and thickets, but occasionally in the interior of moderately dense forest; absent from heavy rain forest.

REMARKS. As has been shown by Brodkorb (1942a), the species is highly plastic, responding readily to variations in rainfall; races from areas of high rainfall are richly colored, while those from more arid regions are paler.

O. v. intermedia occurs in a comparatively dry zone and is pale, but not so pale as *O. v. pallidiventris* from the arid tip of the Peninsula. It is most easily distinguished from *O. v. pallidiventris* by the coloration of the abdomen, which is isabelline rather than nearly pure white, and by the coloration of the tips of the rectrices, which are much more distinctly isabelline. The race as a whole, however, is not so distinct as most of the races into which the species has been divided. It is merely an intermediate form, as it has been appropriately named.

A wide range of morphological variation is found among individuals of many of the races endemic to the Peninsula. This is the result of the comparatively small geographic area to which the races are confined and the lack of clear-cut barriers to stem the interchange of genes between populations. *O. v. intermedia* is no exception.

The bird from Vigía Chico is almost exactly comparable to typical *O. v. pallidiventris*, while three of the four specimens from Tabi, which is at the same latitude, are without question referable to *O. v. intermedia*. The area surrounding Vigía Chico is more arid than farther in the interior and

the population probably reflects, in its coloration, the difference in rainfall.

Even a specimen from the high forest near Laguna Chacabacab and one from Matamoros (Traylor, 1941) approach *O. v. pallidiventris*, whereas the majority of specimens from these areas are without question *O. v. intermedia*. There is, however, no approach to the nominate form anywhere on the Peninsula, although Ridgway and Friedmann (1946) have included southern Campeche within its range.

A specimen from Meco has been included within the range of *O. v. pallidiventris* by Hellmayr and Conover (1942). I have not examined this bird, but I suspect that its lighter coloration is the result of a condition comparable to that at Vigía Chico. Inasmuch as material from the interior of northern Quintana Roo is assignable to *O. v. intermedia*, leaving the Meco area an isolated unit, it seems better to include the region within the range of *O. v. intermedia*. When more collecting has been done in the narrow, dry coastal strip of Quintana Roo, it may be found that *O. v. pallidiventris* ranges along the eastern coast of the Peninsula and that the specimens from Meco and Vigía Chico are in reality a part of that population. On the other hand, it is difficult to visualize any mechanism which would allow a small population distributed along a narrow coastal belt to maintain its integrity when contiguous with a larger inland population.

BREEDING. A few specimens taken in late January were approaching breeding condition but the height of the season appears to be in March and April, when the birds are heard calling everywhere. By June they are nearly silent.

WEIGHT. Nonbreeding males from Laguna Chacabacab and near Xtocomo weighed 401.6 and 366.0 grams respectively. Nonbreeding females from near Aguada Seca and Xtocomo weighed 453.2 and 299.5 grams.

ORTALIS VETULA PALLIDIVENTRIS Ridgway.

Ortalis vetula pallidiventris Ridgway, Man. No. Am. Bds., p. 209, 1887. (Yucatán.)

RANGE. The race is endemic to northern Yucatán; records from Islas Holbox, Mujeres, and Cozumel doubtfully valid.

SPECIMENS. Yucatán—Santa Clara, 1♂, Sept. 14, 1950; Xocempich, 1♀, Dec. 15, 1950, 1♀, Oct. 6, 1951.

HABITAT. Scrub and deciduous forest.

REMARKS. The specimens from Xocempich are typical of the race, while the single bird from Santa Clara is unusually pale below and has the tips of the rectrices pure white. I have seen no specimen comparable to this, but, because it comes from the most arid area of the Peninsula, its unusual paleness is not unexpected and simply exemplifies the close correlation between precipitation and the coloration of the plumage in the species.

In the British Museum there are specimens collected by Gaumer which are labeled as having come from Isla Holbox, Isla Mujeres, and Isla Cozu-

mel (Ogilvie-Grant, 1893). I strongly suspect, for the following reasons, that these localities are erroneous.

Both Isla Holbox and Isla Mujeres are very small islands with no habitats suitable for the species. While at some time in the distant past it is barely conceivable that they may have supported chachalacas, it is extremely doubtful that this could have been as recently as the 1880's when Gaumer visited the islands.

On Isla Holbox I talked with an old man who has lived on the island since childhood. He remembered that when he was a child an American, who might have been Gaumer, visited the island and made a collection of birds. He assured me, however, that chachalacas had never occurred on the island during his lifetime.

Isla Mujeres is known to have supported a fairly large human population since its discovery by Europeans early in the sixteenth century, and must have been occupied by Mayas for a considerable period before that, since a substantial pre-Columbian ruin is present. It is hardly possible that chachalacas could have existed under such conditions until only 70 years ago.

Isla Cozumel is another problem because of its large area and because it contains forests which are suitable to chachalacas and is known to support *Crax rubra*, or at least to have supported the species until very recently. Numerous inquiries, however, failed to reveal any knowledge of the chachalaca on the island.

Additional evidence against the presence of the species on these islands is found in the fact that only Gaumer reported the species from there, although all three islands have been visited by at least two other collectors.

Mr. J. D. Macdonald has examined the specimens in the British Museum, which are labeled as having been collected on the islands, and reported (*in litt.*) that they are all pale ventrally and referable to *O. v. pallidiventrtris*. Salvin (1889) also found the specimens from Isla Mujeres and Isla Holbox indistinguishable from those of northern Yucatán; he had no specimens from Isla Cozumel at that time. While this alone is not sufficient evidence to discredit the labeling of the specimens, when combined with the other data there remains little doubt that the birds were not insular residents.

Gaumer's collections were usually labeled with the barest of data. It seems probable that data were not written in the field, but rather at the convenience of the collector, which may have been months, or even years, later. Under these conditions it is understandable how confusion could have resulted.

Therefore, it appears entirely safe to assume that chachalacas have not existed on Isla Holbox and Isla Mujeres within the past 70 years, and probably never. They are not now present on Isla Cozumel, although it is conceivable that they were at some early period, but probably not during Gaumer's visits.

Family PHASIANIDAE

COLINUS NIGROGULARIS PERSICCUS Van Tyne and Trautman.
Black-throated Bobwhite. Codorniz. Bech'.

Colinus nigrogularis persiccus Van Tyne and Trautman, Univ. Mich., Mus. Zool., Occasional Papers, No. 439:4, 1941. (5 km. south of Progreso, Yucatán.)

RANGE. The species occurs from the Yucatán Peninsula south to Honduras; the race has its center of distribution at Progreso and extends to Celestún on the west, Mina de Oro on the east, and inland about 20 kilometers from Progreso, tapering to less than 10 kilometers at the eastern extremity and confined to the narrow projection of land at Celestún on the west; *C. n. caboti* on the remainder of the Peninsula; the nominate form from Petén southward.

SPECIMENS. Yucatán—Celestún, 1 ♂, Jan. 10, 1 ♀, Jan. 13, 1951; Progreso, 1 chick, Sept. 8, 1950; 10 km. N. Mérida, 2 ♀, 5 chicks, Sept. 6, 1 ♂, Sept. 10, 1 ♂, Oct. 14, 1950; Conkal, 1 ♂, Sept. 9, 1950; Providencia, 1 ♂, 1 chick, Aug. 8, 1950; Santa Clara, 1 ♂, May 6, 1949, 1 ♂, July 3, 1 ♂, Aug. 8, 1 ♂, Aug. 22, 4 chicks, Aug. 23, 1 ♀, 1 chick, Aug. 30, 1 ♂, Sept. 5, 1 ♂, Sept. 12, 1 ♂, Dec. 6, 1950, 1 ♂, May 30, 1 ♂, June 27, 1 ♂, July 14, 1952; 2 km. S. Santa Clara, 1 ♀, Aug. 8, 1950; 6 km. S. Santa Clara, 1 ♀, Aug. 8, 1950; 7 km. S. Santa Clara, 1 ♂, Aug. 29, 1950; Mina de Oro, 1 ♂, 1 ♀, May 16, 1952; 4 km. S. Mina de Oro, 1 ♂, 1 ♀, May 16, 1952.

HABITAT. Coastal scrub.

REMARKS. The choice of Progreso for the type locality of this pallid race is exceedingly fortunate, for it is the center of its very limited distribution, as determined by this long series.

Specimens from the eastern and southern extremities of the range show an approach to *C. n. caboti*, while those from Celestún are typical of the form in every respect, apparently owing to the isolation of the region from the mainland by a water barrier, which prevents free intercourse between the populations.

In general, the juvenal plumage of this race is lighter and more gray than that of *C. n. caboti* at the same stage.

BREEDING. Breeding appears to begin in mid-April. The duration of the reproductive season is unknown, but it probably extends at least until August, as evinced by the collection of a chick one-quarter grown on August 30. Further data will probably reveal an even more prolonged reproductive period, since *C. n. caboti* has been found breeding as late as November.

COLINUS NIGROGULARIS CABOTI Van Tyne and Trautman.

Colinus nigrogularis caboti Van Tyne and Trautman, Univ. Mich., Mus. Zool., Occasional Papers, No. 439:5, 1941. (Chichén Itzá, Yucatán.)

RANGE. The race occurs throughout Yucatán, with the exception of the area occupied by *C. n. persiccus*, south to central Campeche; sight record from west-central Quintana Roo.

SPECIMENS. Yucatán—Dzidzantún, 1♂, July 3, 1950, 1♂, Nov. 2, 1♀, Dec. 4, 1951, 1♂, 1♀, Jan. 26, 1♂, May 13, 1♂, 1♀, May 30, 2♂, 1♀, June 14, 2♂, 1♀, June 28, 2♀, June 29, 1952; Yobaín, 1♂, Aug. 7, 1♂, Aug. 12, 1950; Telchác Pueblo, 1♂, Aug. 5, 1950; Temax, 1♀, Oct. 30, 1951; Buctzotz, 1♀, May 13, 1952; Sinaché, 1♂, Aug. 7, 1♀, Aug. 14, 1950, 1♀, Sept. 30, 1951; Motul, 1♂, Aug. 14, 1♂, Sept. 5, 1♂, 1♀, 4 chicks, Sept. 9, 1950; 5 km. E. Mérida, 1♂, Sept. 27, 1950; 15 km. E. Mérida, 2♂, 1♀, July 14, 1♂, Aug. 16, 1950; 30 km. E. Mérida, 1♂, 1♀, Mar. 31, 1950; 34 km. E. Mérida, 1♂, 1 chick, Sept. 27, 1950; Pisté, 1♀, Apr. 14, 1952; 10 km. W. Káua, 1♀, Apr. 30, 1949; Xocempich, 1♂, May 12, 1 chick, Dec. 1, 1♀, Dec. 15, 1949, 1♀, Sept. 28, 1950, 1♂, May 26, 1951, 1♂, 1♀, June 30, 1952; San Joaquín, 1♂, 1♀, Apr. 7, 1951; Uxmal, 1♂, July 22, 1950, 1♂, Jan. 17, 1951. Campeche—Iturbide, 1♂, Apr. 23, 1952; 7 km. E. Cd. Campeche, 1♂, July 22, 1950, 27 km. E. Cd. Campeche, 1♂, July 22, 1950; Champotón, 1♂, July 17, 1♂, July 18, 1950, 1♀, Jan. 28, 1951.

HABITAT. Extremely abundant in the fields of *henequén* surrounding Mérida. In the area beyond the *henequén* zone found commonly in *milpas* and open deciduous forest.

REMARKS. Specimens from northern Yucatán, viz., Dzidzantún, Motul, Sinaché, etc., exhibit an approach toward the coloration of *C. n. persiccus*. Birds from Campeche are darker on the whole than those from central Yucatán, indicating a cline toward the nominate form.

There is considerable variation in the coloration of the underparts of both sexes in the two Peninsular races. Ventrally, a few males appear to have black feathers with white centers, rather than white feathers with black margins. After examining over 100 specimens of the two races, including two series of topotypes generously loaned to me by Dr. Van Tyne, I conclude that the coloration and pattern of the breast and abdomen cannot be used for racial criteria in either sex. The darker upperparts, the reduction, or absence, of black markings on the side of the neck, and the reduction of barring on the tail easily distinguish the males of *C. n. caboti* from those of *C. n. persiccus*; the darker dorsal surface and throat distinguish the females.

Because of the extensive cultivation of *henequén* in the vicinity of Mérida, and the presence of Indians who practice *milpa* agriculture in the outlying districts, the present area of habitats suitable for quail is vastly greater than at any time during the history of the Peninsula. Without doubt, the existing population of quail is at least several times greater than that during even the height of the Maya culture, when much of the Peninsula was inhabited and under cultivation. To be convinced of this, one has

merely to walk through the *henequén* fields where the quail occur in almost unbelievable numbers within the thick grass which has developed after repeated burning. The density of the population is not even closely approached in the most favorable of abandoned *milpas*.

South of Yucatán quail are much less abundant. In Quintana Roo I have seen only one small covey and heard a few more in the savannas and *milpas* surrounding Laguna Chichancanab. In Campeche the species is found farther south than in Quintana Roo, probably owing to the presence of a larger human population and the creation of favorable habitats.

The farthest south on the Peninsula that I have recorded the quail is a few kilometers southeast of Pixoyal, where a small covey was seen in the road near a *milpa* in an otherwise dense forest. Now that roads are being built and the forest is being destroyed the quail may be expected to extend its range.

BREEDING. Since the majority of the specimens were not collected by me, data on the breeding condition of the birds were not collected systematically, and our knowledge of this phase of the biology of the species must remain sketchy. The earliest indication of breeding was noted on April 30. Females with eggs have been taken in late June and juvenal birds, about half grown, as late as early December. Traylor (1941) collected chicks he estimated to be only a few days old in early November. Obviously, the reproductive season is very prolonged and may last over six months of each year.

WEIGHT. A male weighed 143.6 and a female 135.1 grams. Van Tyne and Trautman (1941) found a male and female to weigh 126.0 and 128.5 grams respectively.

ODONTOPHORUS GUTTATUS (Gould).
Spotted Wood-Quail. Bulu'tok'.

Ortyx guttata Gould, Zool. Soc. London, Proc., 5:79, 1837 (= 1838). ("Bay of Honduras.")

RANGE. A monotypic species ranging from Veracruz and Oaxaca to western Panama; on the Peninsula in extreme southern Campeche and Quintana Roo.

SPECIMENS. Quintana Roo—25 km. W. Chetumal, 1 ♂, Aug. 12, 1950; Bacalar, 1 ♂, 1 ♀, Feb. 14, 1952, Campeche—2 km. N. Aguada Seca, 1 ♀, Feb. 6, 1951.

HABITAT. Dense rain forest with an open understory.

REMARKS. The species has a rather limited distribution on the Peninsula, owing to its preference for dark forest, free of vegetation at the ground level. It is relatively common near Aguada Seca, and also was seen on a few occasions at Agua Blanca.

BREEDING. It is said by the local people to breed in May and June. Van Tyne (1935) collected a downy chick in early May in Petén.

WEIGHT. A female weighed 263.7 grams.

DACTYLORTYX THORACICUS SHARPEI Nelson.
Singing Quail. Chibilub.

Dactylortyx thoracicus sharpei Nelson, Biol. Soc. Wash., Proc., 16:152, 1908.
(Apazote, Campeche.)

RANGE. The species occurs from northeastern Mexico to Honduras and El Salvador; the race in Campeche, Yucatán, and the northern half of Quintana Roo; *D. t.* subsp. contiguous in the southern half of Quintana Roo; about 16 additional races, but their ranges poorly understood; Peninsular populations possibly isolated from all other populations, which are found chiefly at high altitudes.

SPECIMENS. Yucatán—Xocempich, 1♀, Jan. 5, 2♂, 1♀, May 25, 1951, 1♀, May 7, 1♂, 3 chicks, July 24, 1 chick, Aug. 10, 1952, 1♀, Jan. 6, 1953. Quintana Roo—Carrillo Puerto, 1♀, June 16, 1950.

HABITAT. Very common in deciduous forest; rather rare in rain forest.

REMARKS. Although this is an abundant species throughout the zone of deciduous forest, it is exceedingly difficult to collect owing to its secretive nature and its habit of calling for only a few minutes at dusk. Unless one is fortunate enough to be within a short distance of a calling bird, there is usually not sufficient time to locate it before it ceases to call, or, if the general location can be found, it is often impossible to see the bird in the dim forest. Legters collected this splendid series with the aid of Indian hunters.

The species is known in Maya as *Chibilub*, which is an onomatopoeic representation of its call.

BREEDING. The female collected on May 7 was incubating five fresh eggs. The three chicks collected on July 24 are about half feathered and the chick taken August 10 is feathered on its wings only. There are no other breeding data available, but from this scant information it appears that nesting extends from early May to early August.

DACTYLORTYX THORACICUS subsp.¹

RANGE. Known only from southern Quintana Roo in the vicinity of Laguna Bacalar.

SPECIMENS. Quintana Roo—12 km. W. Bacalar, 1♂, Apr. —, 1950; 24 km. NW. Xtocomo, 1♀, Feb. 25, 1♀, Feb. 26, 1951.

HABITAT. Rain forest.

REMARKS. The presence of a population in the rain forest of Quintana Roo, which is morphologically distinct from that of the deciduous forest of the northern portion of the Peninsula, is not unexpected, but several

1. This race is being described by Warner and Harrell (in press).

deviations from the usual pattern of peninsular riation are apparent.

It is ordinarily found that populations in the deciduous forest of Yucatán are more pallid than those from the rain forest of Campeche and Yucatán. In this species, however, Warner and Harrell (in press) have discovered that a sample of the population in Campeche (*D. t. sharpei*) is dark, as expected, but specimens from Yucatán, while somewhat lighter, are still referable to *D. t. sharpei*. In southern Quintana Roo, instead of being dark, the population is markedly light. In other words, there is a cline in the form of an arc from Campeche north through Yucatán and south to southern Quintana Roo. The single specimen from Carrillo Puerto does not fit into the pattern very well since it is slightly darker than birds from Yucatán, i.e., it approaches the Campeche population, rather than the race from southern Quintana Roo.

Although this is a fairly large series, considering the difficulty with which specimens are collected, it is unfortunately very localized, and we must await the collection of additional material from other parts of the Peninsula before this interesting phenomenon can be fully plotted and understood.

In addition to the localities from which specimens of this new race were obtained, I have heard the species calling 46 kilometers west of Chetumal and at Laguna Chacanbacab, but never in great numbers as in the deciduous forest of Yucatán.

WEIGHT. The females weighed 168.0 and 193.6 grams.

Family MELEAGRIDIDAE

MELEAGRIS OCELLATA Cuvier.

Ocellated Turkey. Pavo de Monte. Kuts.

Meleagris ocellata Cuvier, Mém. Mus. Hist. Nat., 6:1, 4, 1820. (Gulf of Honduras.)

RANGE. The species occurs on the Yucatán Peninsula, and in adjacent parts of Tabasco, Petén, and British Honduras; related species from central Mexico northward.

SPECIMENS. Quintana Roo—24 km. W. Xtocomo, 1♀, Feb. 23, 1951; Carrillo Puerto, 1 chick, May —, 1947, 1♂, Jan. 3, 1♀, Jan. 10, 1948, 1♂, June 3, 1950; Tabi, 1♂, Mar. 16, 1949; Tulum, 1♂, Jan. 13, 1949; Xcan, 1♂, Apr. 26, 1♂, Apr. 29, 1949. Yucatán—Xocempich, 1♀, Oct. 3, 1♀, Oct. 31, 1946, 1♀, Oct. 9, 1♀, Nov. 4, 1948, 1♂, Apr. 19, 1♀, Dec. 13, 1949, 1♀, Dec. 9, 1950, 1♂, May 15, 1951. Campeche—90 km. E. Escárcega, 1♂, Feb. 13, 1951; 110 km. E. Escárcega, 1♀, Mar. 1, 1951.

HABITAT. Open deciduous forest, savannas, *milpas*, and other clearings; absent from the interior of dense rain forest, but present on the edges.

REMARKS. The characters distinguishing the Ocellated Turkey from the northern form do not appear to me to be of more than specific value. I,

therefore, am unable to recognize the monotypic genus *Agriocharis* Chapman.

The Ocellated Turkey is fairly common throughout the Peninsula wherever there are suitable habitats which are not in close proximity to large human populations. In common with *Colinus nigrogularis*, the turkey probably now exists in larger numbers than before the population of the Peninsula by the Mayas. The cultivation of corn, which necessitated the destruction of the forest, undoubtedly created suitable habitats where none existed previously. Unlike the quail, the turkey does not remain in heavily trafficked regions, and is now almost totally absent from the northwestern part of Yucatán. On the other hand, it thrives, in spite of constant hunting by the Indians, in districts where there are small villages surrounded by *milpas*.

The destruction of the forest by lumbering interests and the construction of temporary logging roads into the interior of the highest forest may very well serve to create many new suitable habitats, and thereby increase the turkey population. Unless the gain is offset by greater hunting pressure brought about by prosperity, which facilitates the purchase of expensive ammunition, and by the introduction of motor vehicles, which allow the hunters greater mobility, the Ocellated Turkey is in no immediate danger, in contrast to its northern counterpart, *M. gallopavo*.

BREEDING. Little can be added to the account of the reproductive season presented by Leopold (1948). The first indications of increased gonadal activity are noted in late February. By April breeding is fully underway and continues through most of June.

Family GRUIDAE

GRUS CANADENSIS subsp. Sandhill Crane.

RANGE. The species breeds in eastern Siberia and western Arctic North America southward, locally, over much of the United States to Cuba; the nominate race in the northern part of the range, wintering south to central Mexico; *G. c. tabida* in southwestern Canada and the northern United States south to northern California; winter range imperfectly known but apparently found south to Mexico (*vide*, Walkinshaw, 1949); *G. c. pratensis* resident in southeastern United States; *G. c. nesiotis* resident in Cuba and the Isle of Pines; a doubtful record from Yucatán (Boucard, 1883) and a sight record from Banco Chinchorro, Quintana Roo.

REMARKS. The "Check-list of the Birds of Mexico" (Friedmann, Griscom, and Moore, 1950) indicates that *G. c. tabida* has been recorded from Quintana Roo, including Isla Cozumel. The record from Quintana Roo, presumably differentiating a mainland record from a record from Cozumel, is supposedly based on a specimen in the University of Michigan Museum

of Zoology. I have inquired of this specimen and been informed by Dr. Robert W. Storer (*in litt.*) that the museum contains no specimen from Quintana Roo and that the Check-list must be in error.

I have also attempted to locate the specimen or publication upon which the Cozumel citation is based and must conclude that this is another error. In their bibliography of the species, Ridgway and Friedmann (1941) cited Cozumel as one of the localities listed by Salvin and Godman (1903) but this is incorrect, and undoubtedly this error was perpetuated by the compilers of the Mexican Check-list. Mr. J. D. Macdonald informed me (*in litt.*) that there is no specimen from the Peninsula or its islands in the British Museum. If Salvin had had a specimen it is to be expected that it would have been deposited in that institution.

Thus, of the published records of this species from the Peninsula only the one from Yucatán (Boucard, 1883) remains, and this is questionable. Gaumer is presumed to have collected a crane near Tizimín but when his collection, which was sent to Boucard, was examined by Salvin (*in Boucard*, 1883) no specimen was found.

On February 5, 1949, a Sandhill Crane was seen on Cayo Centro, Banco Chinchorro. The bird was seen at a distance of not more than 15 meters and was watched for several minutes. We were separated from it by a strip of very deep watery mud and it would have been impossible to have recovered the specimen if it had been shot. Its plumage was nearly completely stained reddish-brown except for the neck—a phenomenon frequently observed in the species (Walkinshaw, 1949).

Family ARAMIDAE

ARAMUS GUARAUNA DOLOSUS Peters.

Limpkin.

Aramus pictus dolosus Peters, Boston Soc. Nat. Hist., Occ. Papers, 5:144, 1925. (Bolsón, Costa Rica.)

RANGE. The species occurs from the southeastern United States and the Greater Antilles to Argentina; the race from Veracruz and Oaxaca south to Panama; on the Peninsula in Campeche (Brodkorb, 1943a) and Quintana Roo, including Isla Cozumel (Salvin, 1889); *A. g. pictus* in the southeastern United States, Cuba, and the Isle of Pines; *A. g. elucus* on Puerto Rico and Hispaniola.

SPECIMENS. Quintana Roo—Laguna Chacanbacab, 1 ♀, May 15, 1 ♀, May 18, 1949; 15 km. NW. Kantunil-Kín, 1 ♂, Dec. 30, 1950.

HABITAT. Vicinity of lakes and rivers.

REMARKS. Contrary to Ridgway and Friedmann (1941) and Friedmann, Griscom, and Moore (1950) there exists no published record of the species from the state of Yucatán.

The species is not uncommon in the vicinity of fresh water, but the lack of suitable habitats causes the Limpkin to be very local on the Peninsula. It is fairly common along the Río Hondo and occurs in large concentrations in a number of marshes bordering the river.

BREEDING. The male collected in late December had enlarged testes. The females taken in mid-May had slightly enlarged ovaries. Nothing further is known of the breeding season, although it is unlikely that it is normally as prolonged as suggested by these data.

Family RALLIDAE

RALLUS LONGIROSTRIS PALLIDUS Nelson. Clapper Rail. Gallinola.

Rallus pallidus Nelson, Biol. Soc. Wash., Proc., 18:141, 1905. (Río Lagartos, Yucatán.)

RANGE. A highly polymorphic species occurring from Connecticut and California southward through the United States, the West Indies, Mexico, and Central America to Brazil and Peru; the race endemic to Yucatán and Quintana Roo, possibly including Cayo Culebra and Isla Holbox; contiguous races on Banco Chinchorro (*R. l. grossi*) and in British Honduras (*R. l. belizensis*).

SPECIMENS. Quintana Roo—Vigía Chico, 1 ♂, Mar. 30, 1949. Yucatán—Santa Clara, 1 ♂, Aug. 2, 1952.

HABITAT. Mangrove swamps.

REMARKS. The specimen from Yucatán is the third known of this pallid form. It differs from the bird from Quintana Roo in being slightly darker below and having a longer bill and wing. The exposed culmen measures 54.0 and the chord of the wing 151.0; the same parts on the specimen from Quintana Roo measure 50.5 and 139.0 millimeters.

A single Clapper Rail was seen on Cayo Culebra in April 1949, a number of rails were heard calling, and their foot-prints were observed in the mud, on Isla Holbox in December 1951.

BREEDING. The gonads of the bird taken in late March were very enlarged.

RALLUS LONGIROSTRIS GROSSI Paynter.

Rallus longirostris grossi Paynter, Condor, 52:139, 1950. (Cayo Centro, Banco Chinchorro, Quintana Roo.)

RANGE. Presumably confined to Banco Chinchorro.

SPECIMEN. Quintana Roo—Cayo Centro, Banco Chinchorro, 1 ♀, Feb. 4, 1949.

HABITAT. Mangrove swamp.

REMARKS. This subspecies, which is darker and smaller than the races on the adjacent mainland, is known only from the type specimen.

BREEDING. The specimen had a slightly enlarged ovary and presumably would have bred in March.

RALLUS LIMICOLA LIMICOLA Vieillot.
Virginia Rail.

Rallus limicola Vieillot, Nouv. Dict. Hist. Nat., 28:558, 1816. (Pennsylvania.)

RANGE. The species ranges from southern Canada to the Straits of Magellan; the race breeds from southern British Columbia east to Nova Scotia and south over much of the United States, and locally in Mexico to the Distrito Federal; winters to Guatemala; on the Peninsula known only from Yucatán (Sharpe, 1894).

REMARKS. A specimen collected by Gaumer (Sharpe, 1894) at Tizimín on June 23, is the only record from the Peninsula. Although an unusually late date for a migrant, it is doubtful that it breeds there since intensive collecting should have revealed more specimens.

Being familiar with the usual lack of data on Gaumer's specimens, one might question the validity of the date on this one.

ARAMIDES CAJANEALBIVENTRIS Lawrence.
Gray-necked Wood-Rail. Gallinola.

Aramides albiventris Lawrence, Acad. Nat. Sci. Phila., Proc., 19:234, 1876. (British Honduras.)

RANGE. The species occurs from central Mexico to Argentina; the race in British Honduras, eastern Guatemala, and Chiapas, and on the Peninsula in Campeche, Quintana Roo, including Isla Cozumel (Salvin, 1889), and Yucatán; *A. c. mexicana* adjacent to the north; several races southward.

SPECIMENS. Quintana Roo—Estero Franco, 2♀, Jan. 27, 1949; Laguna Chacanbacab, 1♂, May 15, 1949; 46 km. W. Chetumal, 1♀, Feb. 11, 1949; Ucum, 1♂, Feb. 21, 1952; Bacalar, 1♂, Feb. 14, 1♀, Feb. 21, 1952. Yucatán—Santa Clara, 1♂, May 14, 1952, 1♀, May 12, 1953. Campeche—2 km. N. Aguada Seca, 1♂, Feb. 8, 1951.

HABITAT. Chiefly in rain forest near fresh water, but occasionally in coastal mangroves.

REMARKS. The Gray-necked Wood-Rail was collected by Cabot at Las Bocas de Silan (= Dzilam Puerto) over 100 years ago (Salvin, 1874) and was not recorded again from Yucatán until recently when it was taken at Santa Clara. The absence of its usual habitats in Yucatán undoubtedly accounts for the rarity of the species in that state, although it is to be expected in the forest northeast of Tizimín.

BREEDING. The reproductive season appears to be prolonged. Specimens taken in late January were nearly ready to breed and in mid-May, the latest a specimen was collected, the gonads were still enlarged.

WEIGHT. The male from Campeche, which is nearly adult, weighed 466.4 grams.

ARAMIDES AXILLARIS Lawrence.
Rufous-necked Wood-Rail. *Gallinola*.

Aramides axillaris Lawrence, Acad. Nat. Sci. Phila., Proc., 13:107, 1863. (Barraquilla, Colombia.)

RANGE. A monotypic species ranging from Mexico south to British Guiana and Ecuador; local north of Panama; in Mexico known on the mainland from Sinaloa, Nayarit, Guerrero, and on the Peninsula from Isla Mujeres, Quintana Roo (Bangs, 1907), Campeche, and Yucatán.

SPECIMENS. Yucatán—Xocempich, 1♀, June 20, 1951. Campeche—Champotón, 1♂, Jan. 26, 1♂, 2♀, Jan. 27, 1951.

HABITAT. Usually found in mangrove swamps. A specimen taken at a *cenote* near Xocempich may merely represent an accidental occurrence.

REMARKS. The species is very common within the mangroves a short distance inland from the mouth of the river at Champotón. It was first collected on the Peninsula by Cabot at Las Bocas de Silan (= Dzilam Puerto) (Salvin, 1874). There is also one record from Isla Mujeres (Bangs, 1907).

In spite of intensive collecting in many insular and coastal localities, I have seen the species only at Champotón. From this it is presumed that the rail is represented on the Peninsula by a few isolated populations.

PORZANA CAROLINA (Linnaeus).
Sora. *Gallineta*.

Rallus carolinus Linnaeus, Syst. Nat., ed. 10, 1:153, 1758. (Hudson Bay.)

RANGE. A monotypic species breeding from central British Columbia east to Nova Scotia and south to Baja California and Maryland; winters from the southern United States and West Indies south to Peru and British Guiana; recorded from Yucatán, and on Isla Cozumel (Salvin, 1889) and Banco Chinchorro, Quintana Roo.

SPECIMENS. Quintana Roo—Cayo Norte, Banco Chinchorro, 1♂, Feb. 4, 1949. Yucatán—Santa Clara, 3♂, 1♀, Dec. 6, 1950, 1♂, 1♀, Nov. 10, 1951, 1♂, 3♀, Dec. 13, 1952; Dzilam Puerto, 1♂, Dec. 5, 1950, 1♂, Dec. 10, 1♂, Dec. 22, 1951.

HABITAT. Marshes and mangroves.

REMARKS. The Sora is locally abundant but has yet to be recorded from Campeche.

Friedmann, Griscom, and Moore (1950) list it as resident from August 12 to late May.

WEIGHT. A male weighed 100.5 grams.

LATERALLUS RUBER (Sclater and Salvin).
Ruddy Crane.

Corethrura rubra Sclater and Salvin, Zool. Soc. London, Proc., 28:300, 1860.
(Verapaz, Guatemala.)

RANGE. The species, which is rare and apparently local, ranges from Tamaulipas to Nicaragua; on the Peninsula recorded from Campeche (Bordkorb, 1943a), the mainland of Quintana Roo (sight record), Isla Cozumel (Salvin, 1889), and Yucatán.

SPECIMENS. Yucatán—Santa Clara, 1♂, Sept. 19, 1950, 1♂, May 30, 1952; Dzidzantún, 1♂, May 31, 1952.

HABITAT. Marshes.

REMARKS. This species, known from very few specimens, has been divided into three races, in spite of the limited and highly variable material which is available.

L. r. tamaulipensis supposedly ranging from Tamaulipas to Petén, is said to differ from the nominate form in having a longer and heavier bill, and by having the chestnut of the mantle restricted to a collar. The nominate race is claimed to occupy an intermediate area, including the Yucatán Peninsula, and *L. r. ruberrimus*, a more chestnut-colored form with a short, thick bill, is asserted to be the resident race in El Salvador and Nicaragua.

Bordkorb (1943a) has reviewed the status of these races and has come to the conclusion that none is valid. I, too, am unable to ascertain any consistency in the characters ascribed to the races, after having examined five specimens from areas exclusive of the Peninsula, in addition to the three from Yucatán. Although the material available to me is limited, it is no less abundant than that upon which the races were erected.

The species is undoubtedly very local on the Peninsula, owing to the scarcity of suitable marshes, but it may not be so rare as the paucity of records would imply. I observed Ruddy Cranes several times while at Laguna Chacanbacab in 1949 and on all occasions the birds were found in the high grass in the marshes bordering the lake. However, instead of taking flight when disturbed, they remained hidden until almost underfoot and then scurried off into the grass in the manner of a small rodent.

BREEDING. A downy chick, taken at El Vapor, Campeche, on July 30 (Bordkorb, 1943a), is the only breeding record available from the Peninsula.

GALLINULA CHLOROPUS CACHINNANS Bangs.
Common Gallinule. Gallinola.

Gallinula chloropus cachinnans Bangs, New Eng. Zool. Club, Proc., 5:96, 1915.
(Arbuckle Creek, Florida.)

RANGE. The species breeds from southern Canada to Argentina; the race from central California, southern Ontario and Vermont south to Baja California, and very locally to Panama; winters in southern part of range; known as a winter visitant from Yucatán and Quintana Roo, including Isla Cozumel.

SPECIMENS. Quintana Roo—Ucum, 1♂, Feb. 26, 1952; Isla Cozumel, 1♀, Feb. 2, 1951. Yucatán—Xocempich, 1♀, Oct. 17, 1949; 1 km. S. Dzilam Puerto, 1♀, Dec. 22, 1951; Dzidzantún, 1♀, Feb. 23, 1♂, Mar. 10, 1953.

HABITAT. Usually occurs in the vicinity of marshes, but the specimen from Xocempich was found several miles from the nearest *cenote* and is presumed to have been migrating.

REMARKS. This gallinule is a relatively uncommon visitant.

PORPHYRULA MARTINICA (Linnaeus).
Purple Gallinule.

Fulica martinica Linnaeus, Syst. Nat., ed. 12, 1:259, 1766. (Martinique.)

RANGE. A monotypic form breeding from South Carolina and Texas south through the Antilles, Mexico, and Central America to northern Argentina and southern Brazil; occurs on the Peninsula in Quintana Roo (Griscom, 1926a), including Isla Cozumel (Salvin, 1889), and Campeche (Traylor, 1941).

HABITAT. Marshes.

REMARKS. The scarcity of fresh-water marshes presumably accounts for the rarity of this species on the Peninsula. I have seen it only once in Quintana Roo and never elsewhere on the Peninsula. In October 1948, a single bird was collected while feeding in the mud at the edge of a roadside ditch, a few kilometers west of Chetumal, but the specimen was too badly damaged to preserve.

Friedmann, Griscom, and Moore (1950) include Yucatán within the range, but, although to be expected in the vicinity of *cenotes* and *aguadas* in that state, I am unable to discover any published record of its occurrence there. Assumedly it has been included in the Check-list on the basis of several old records for Isla Cozumel which were published before the separation of the Territory of Quintana Roo from the State of Yucatán.

FULICA AMERICANA AMERICANA Gmelin.
American Coot.

Fulica americana Gmelin, Syst. Nat., 1:704, 1789. (North America.)

RANGE. The species occurs from North America south to Ecuador, in the Antilles, and in the Hawaiian Islands; the race breeds from central Canada through the United States, and very locally south to Panama; winters in southern half of its range; at present known with certainty only as a winter visitant in Yucatán and Quintana Roo, including the islands of Mujeres (sight record) and Cozumel.

SPECIMENS. Quintana Roo—Bahía de Chetumal, 1 ♀, Feb. 23, 1949; Isla Cozumel, 1 ♀, Jan. 12, 1949. Yucatán—Santa Clara, 1 ♀, Nov. 6, 1950, 1 ♂, Oct. 21, 1952.

HABITAT. Occurs in sheltered bays, and inland on ponds and lakes.

REMARKS. Coots are relatively common inland on the larger bodies of water and occasionally thousands are seen in the bays along the coast of Quintana Roo and Yucatán.

Only a single individual was observed on Isla Mujeres, but the inhabitants of the island hunt this species assiduously and say that it is usually present in great numbers.

BREEDING. There is no record of the species breeding on the Peninsula, but this may not be a significant observation since little collecting has been done in suitable localities during the late spring and early summer.

Sharpe (1894) lists three specimens collected by Gaumer in June on Isla Cozumel. While these may represent resident birds, Gaumer's specimens so frequently lack notations of definite localities, and even more frequently dates, one feels considerable hesitancy in accepting these records as indicative of summer residence.

Family HELIORNITHIDAE

HELIORNIS FULICA (Boddaert).
Sun-Grebe. Xpatux Já.

Colymbus fulica Boddaert, Table Pl. enl., p. 54, 1783. (Cayenne.)

RANGE. Very locally distributed from southern Veracruz to southern Brazil and northeastern Argentina; on the Peninsula known from extreme southern Campeche (Traylor, 1941) and Quintana Roo.

SPECIMEN. Quintana Roo—Ucum, 1 ♂, Feb. 22, 1952.

HABITAT. Found on streams and rivers bordered by forest.

REMARKS. This specimen is the first taken in Quintana Roo and the second from the Peninsula, although in early June 1949, a pair of Sun-Grebes was seen daily at Agua Blanca on the Río Hondo.

Family JACANIDAE

JACANA SPINOSA SPINOSA (Linnaeus).
American Jacana.

Fulica spinosa Linnaeus, Syst. Nat., ed. 10, 1:152, 1758. (Panama.)

RANGE. The species is distributed from extreme southern Texas to Argentina; the nominate form from the lower Rio Grande Valley southward through Mexico and Central America to Panama and on the Greater Antilles; peninsular records from Quintana Roo, including Isla Cozumel (Salvin, 1889), Yucatán (Boucard, 1883), and Campeche (Traylor, 1941).

SPECIMENS. Quintana Roo—Laguna Chacanbacab, 1♂, May 16, 1♂, May 18, 1♂, May 22, 1949.

HABITAT. Lakes and ponds.

REMARKS. As is the case with many species requiring an aquatic habitat, *Jacana spinosa* is very local on the Peninsula, although abundant where it does occur.

BREEDING. Jacanas were nesting at Laguna Chacanbacab in mid-May 1949.

The specimen collected on May 22 had moderately enlarged gonads, although the bird still retains more than half of its juvenal plumage.

WEIGHT. The juvenal male weighed 80.3, and the adults 68.6 and 82.8 grams.

Family HAEMATOPODIDAE

HAEMATOPUS OSTRALEGUS PALLIATUS Temminck.
Oystercatcher.

Haematopus palliatus Temminck, Man. d'Ornith., ed. 2, 2:532, 1820. (Venezuela.)

RANGE. The species is of nearly world-wide distribution; the race on the Atlantic and Gulf coasts from New Jersey south to Brazil, including the West Indies, and on the Pacific Coast from the Isthmus of Tehuantepec to Colombia; on the Peninsula in Yucatán, and on Islas Cozumel (Salvin, 1889) and Holbox (sight record), Quintana Roo; two races in northwestern Mexico.

SPECIMEN. Yucatán—El Cuyo, 1♂, Dec. 10, 1950.

HABITAT. Coastal.

REMARKS. I have observed this species only at El Cuyo, where four birds were present and on Isla Holbox where there were five.

WEIGHT. The specimen weighed 619.6 grams.

Family CHARADRIIDAE

PLUVIALIS SQUATAROLA (Linnaeus).

Black-bellied Plover.

Tringa squatarola Linnaeus, Syst. Nat., ed. 10, 1:149, 1758. (Sweden.)

RANGE. Breeds throughout the Arctic and winters southward to the Southern Hemisphere; recorded from Yucatán, including Arrecife Alacrán (Paynter, 1953), and Quintana Roo, including Islas Holbox (sight record), Mujeres (sight record), Cozumel, and Cayo Culebra (sight record).

SPECIMENS. Quintana Roo—Isla Cozumel, 1♂, 1♀, Jan. 5, 1949. Yucatán—El Cuyo, 1♀, Dec. 9, 1950; Santa Clara, 1♀, Sept. 11, 1950.

HABITAT. Coastal and insular.

REMARKS. The Black-bellied Plover is a common winter visitant on the Peninsula and its islands, although never found in large concentrations.

WEIGHT. The male weighed 159.7, and two females 163.0 and 203.6 grams.

CHARADRIUS HIATICULA SEMIPALMATUS Bonaparte.

Ringed Plover.

Charadrius semipalmatus Bonaparte, Acad. Nat. Sci. Phila., Jour., 5:98, 1825. (Coast of New Jersey.)

RANGE. The species breeds widely throughout the Arctic and Subarctic of the Northern Hemisphere; the race in North America south to southern Canada, wintering from the southern United States to Chile and Argentina; on the Peninsula recorded from the coast of Quintana Roo (Griscom, 1926a) and on the islands of Mujeres and Cozumel.

SPECIMENS. Quintana Roo—Isla Cozumel, 1♀, Jan. 5, 1♂, Jan. 11, 1949; Isla Mujeres, 1♀, Dec. 23, 1950.

HABITAT. Coastal and insular.

REMARKS. This shorebird is apparently a rare winter visitant. I have observed it only in the localities from which specimens were secured. Friedmann, Griscom, and Moore (1950) include Yucatán within the known range of the species, but I can discover no published record from that state.

WEIGHT. The male weighed 39.4 grams.

CHARADRIUS ALEXANDRINUS TENUIROSTRIS (Lawrence).
Snowy Plover

Aegialitis tenuirostris Lawrence, Lyc. Nat. Hist. New York, Ann., 7:455, 1862.
(Near Guantanamo, Cuba.)

RANGE. The species is widely distributed throughout the more temperate regions of the world; the race, which is doubtfully distinct from *C. a. nivosus* of central and western United States, breeds locally in Florida and the Antilles; in winter ranges to Yucatán and northern Venezuela.

SPECIMENS. Yucatán—Santa Clara, 1 ♂, Sept. 2, 1949, 1 ♂, Aug. 30, 2 ♂, 2 ♀, Aug. 31, 1 ♂, Sept. 14, 1 ♂, 1 ♀, Dec. 6, 1950.

HABITAT. Coastal.

REMARKS. The species has previously been recorded on the Peninsula from Celestún (Lawrence, 1869) and Río Lagartos (Hellmayr and Conover, 1948b). I, however, have observed it only at Santa Clara where hundreds were present in early December 1950. It is not apparent why the species should be present in such large numbers at Santa Clara and not in other regions along the coast, which seem no less suitable.

CHARADRIUS VOCIFERUS VOCIFERUS Linnaeus.
Killdeer.

Charadrius vociferus Linnaeus, Syst. Nat., ed. 10, 1:150, 1758. (South Carolina.)

RANGE. The species breeds in temperate North America south to central Mexico, on the Greater Antilles, and on the coast of Peru; the nominate form from central Canada south to Guerrero; winters to northern South America and in the West Indies; on the Peninsula in Campeche (Traylor, 1941), Yucatán, and Quintana Roo, including Islas Holbox (sight record), Mujeres (sight record), and Cozumel, and Banco Chinchorro (sight record).

SPECIMENS. Quintana Roo—Isla Cozumel, 1 ♂, Jan. 11, 1949. Yucatán—Santa Clara, 1 ♂, Dec. 11, 1952.

HABITAT. Open fields.

REMARKS. The Killdeer is very local on the Peninsula because of the scarcity of suitable habitats. It is most common in northern Yucatán, where the forest has been destroyed, and on the shores of Isla Cozumel. It has not been recorded previously from Isla Mujeres, where several small flocks were seen regularly on the airstrip at the edge of the village.

In Quintana Roo and Campeche the species is rare, but usually can be found wherever an airstrip has been cut in the forest. It is possible that

the creation of airstrips in the southern portion of the Peninsula has led to an increase in the number of Killdeer wintering there.

WEIGHT. A male weighed 76.6 grams.

CHARADRIUS WILSONIA WILSONIA Ord.
Thick-billed Plover.

Charadrius wilsonia Ord, in Wilson, Am. Ornith., 9:77, 1814. (Cape May, New Jersey.)

RANGE. The species breeds from the southeastern coast of the United States to British Honduras, in the West Indies, on the Caribbean coast of South America, and on the Pacific coast from Baja California to Peru; the nominate race from Virginia southward on the Atlantic, the Gulf, and the Caribbean coasts to British Honduras, and on the Greater Antilles and northern Lesser Antilles; winters south to Brazil; on the Peninsula in Yucatán and Quintana Roo, including Islas Cozumel (Salvin, 1889), Mujeres (sight record), and Holbox; *C. w. cinnamominus* breeds on the Caribbean coast of South America and nearby islands; *C. w. beldingi* on the Pacific coast.

SPECIMENS. Quintana Roo—Xcalac, 1 ♂, Feb. 3, 1949; Vigía Chico, 1 ♂, Mar. 30, 1949; Isla Holbox, 1 ♀, Dec. 18, 1 ♀, Dec. 20, 1950. Yucatán—Santa Clara, 1 ♂, 1 ♀, Sept. 14, 1950.

HABITAT. Coastal.

REMARKS. This plover is nowhere very common and usually is seen in small flocks. On Isla Mujeres a single bird was found with a flock of *Charadrius v. vociferus*.

BREEDING. The specimen taken in late March had enlarged testes and appeared nearly ready to breed. The only record of this race breeding on the Caribbean coast was obtained by Salvin (1864) on the cays off British Honduras. Its residence on the coast of the Peninsula, therefore, would not be unexpected.

WEIGHT. A male weighed 54.5, and two females 55.6 and 57.8 grams.

Family SCOLOPACIDAE

NUMENIUS AMERICANUS Bechstein.
Long-billed Curlew.

Numenius americanus Bechstein, in Latham, Allgem. Ueb. Vög., 4:432, 1812. (New York.)

RANGE. Breeds from British Columbia east to Manitoba and south to Nevada and South Dakota; formerly farther east; winters south to Guatemala and formerly to the West Indies; on the Peninsula in Yucatán (sight

record) and Quintana Roo (Paynter, 1950a), including Islas Cozumel (Salvin, 1889) and Holbox.

SPECIMEN. Quintana Roo—Isla Holbox, 1♀, Dec. 18, 1950.

HABITAT. Coastal and insular.

REMARKS. Previously this species had been recorded only from Isla Cozumel (Salvin, 1889) and at Vigía Chico (Paynter, 1950a), but in early December 1950 I observed a flock of 20 at Dzilam Puerto, Yucatán and five on Isla Holbox.

WEIGHT. The bird weighed 702.5 grams.

LIMOSA FEDOA (Linnaeus).
Marbled Godwit.

Scolopax fedoa Linnaeus, Syst. Nat., ed. 10, 1:146, 1758. (Hudson Bay.)

RANGE. Breeds from southern Alberta east to southern Manitoba and south to South Dakota; formerly more widespread; winters from southeastern United States and Baja California to Chile; Peninsular records from Yucatán and from Isla Cozumel, Quintana Roo (Salvin, 1889); a questionable sight record from Isla Holbox, Quintana Roo.

SPECIMENS. Yucatán—Santa Clara, 1♂, Sept. 18, 1950, 1♂, Nov. 30, 1952.

HABITAT. Coastal and insular.

REMARKS. The Marbled Godwit is extremely rare on the Peninsula, having been recorded once before from Yucatán (Lawrence, 1869) and several times from Cozumel (Salvin, 1889; Sharpe, 1896).

In late December 1950, four birds, which apparently were this species, were seen on Isla Holbox at a great distance.

TRINGA FLAVIPES (Gmelin).
Lesser Yellow-legs.

Scolopax flavipes Gmelin, Syst. Nat., 1:659, 1789. (New York.)

RANGE. Breeds from northern Alaska east to northern Mackenzie and south to northern British Columbia and southern Manitoba; winters to extreme southern South America; known from the mainland of Yucatán and Quintana Roo (Peters, 1913), as well as on Islas Holbox (sight record) and Cozumel (Salvin, 1889).

SPECIMENS. Yucatán—Santa Clara, 1♂, Aug. 22, 1♂, Sept. 2, 1♂, Sept. 5, 1♂, Sept. 11, 1♂, Sept. 14, 1♂, Sept. 15, 1950, 2♀, Aug. 29, 1952.

HABITAT. Coastal and insular.

REMARKS. *Tringa flavipes* is the more common of the Yellow-legs on the

Peninsula, but the only locality where I found it abundant was on the mudflats behind the village of Dzilam Puerto.

TRINGA MELANOLEUCA (Gmelin).
Greater Yellow-legs.

Scolopax melanoleuca Gmelin, Syst. Nat., 1:659, 1789. (Chateau Bay, Labrador.)

RANGE. Breeds from Labrador west to Alaska and south to Newfoundland and southern British Columbia; winters to extreme southern South America; specimens from Yucatán and sight records from Quintana Roo (Griscom, 1926a), including Isla Mujeres and Banco Chinchorro.

SPECIMENS. Yucatán—Santa Clara, 1♂, Aug. 30, 1♂, Sept. 5, 1950, 1♂, Mar. 8, 1952.

HABITAT. Coastal and insular.

REMARKS. The Greater Yellow-legs is nowhere common on the Peninsula. I saw a single bird on Isla Mujeres in December 1951, and another on Cayo Centro, Banco Chinchorro in February 1949. The only locality where more than one was observed at any given time was between Santa Clara and Dzilam Puerto, where several small flocks were noted in early December 1950.

TRINGA SOLITARIA SOLITARIA Wilson.
Solitary Sandpiper.

Tringa solitaria Wilson, Am. Ornith., 7:53, 1813. (Pocono Mt., Pennsylvania.)

RANGE. The species breeds throughout much of Alaska and Canada; the race from northern British Columbia to Labrador and south to about 50° N. Lat.; winters from the southern United States to southern South America; recorded from Quintana Roo (Peters, 1913), Yucatán (Hellmayr and Conover, 1948b), and Campeche; distribution of *T. s. cinnamomea* considered below.

SPECIMEN. Campeche—Ichek, 1♂, Apr. 25, 1952.

HABITAT. Vicinity of fresh water.

REMARKS. The species is rare on the Peninsula. I have seen only a single bird at Laguna Chacanbacab and one at the lake near Kantunil-Kín.

In addition to the records cited, which are based on single specimens, one was taken at El Vapor (Brodkorb, 1943a) and three specimens, two from Yucatán and one from Isla Holbox, are listed by Sharpe (1896) as being present in the British Museum.

Mr. J. D. Macdonald has examined the British Museum specimens and informed me (*in litt.*) that the record from Holbox is erroneous; the

specimen is *Tringa flavipes*. The wings of the specimens from Yucatán, both unsexed birds, measure 126.0 and 130.0 millimeters. While the measurement of the wing of an unsexed bird alone is not sufficient to confidently identify the race, it appears that the specimens are probably referable to *T. s. solitaria*, since their measurements fall well within those for the nominate race given by Conover (1944), but at the extreme lower limits for males of *T. s. cinnamomea*.

TRINGA SOLITARIA CINNAMOMEA (Brewster).

Totanus solitarius cinnamomeus Brewster, Auk, 7:377, 1890. (San José del Cabo, Baja California).

RANGE. The race breeds from Alaska eastward through Canada to Hudson Bay and south to about 60° N. Lat.; winters from Mexico to Argentina; on the Peninsula definitely recorded only from Campeche (Brodkorb, 1943a).

REMARKS. Friedmann, Griscom, and Moore (1950) included Quintana Roo within the winter range of this race, citing a specimen in the Harvard Museum of Comparative Zoology for their evidence. The only specimen from Quintana Roo present in this Museum is a bird collected by Peters and identified by him (1913) as the nominate race. I have examined this specimen and also refer it to *T. s. solitaria*.

ACTITIS MACULARIA (Linnaeus).
Spotted Sandpiper.

Tringa macularia Linnaeus, Syst. Nat., ed. 12, 1:249, 1766. (Pennsylvania.)

RANGE. Breeds throughout most of North America, exclusive of Mexico; winters from the southern United States to Chile and Argentina; found on the mainland of Quintana Roo (Peters, 1913), Yucatán (Sharpe, 1896), and Campeche, and on Cayos Arcas and Triángulo Oeste, Banco Campeche (Paynter, 1953), on Islas Holbox (sight record), Mujeres (sight record), and Cozumel, on Cayo Culebra (sight record), and on Cayo Centro, Banco Chinchorro (Griscom, 1926b).

SPECIMENS. Quintana Roo—Isla Cozumel, 2♀, Jan. 3, 1949. Campeche—Champotón, 1♀, Jan. 27, 1951.

HABITAT. Occurs most commonly in vicinity of fresh water, but is also coastal and insular.

REMARKS. The Spotted Sandpiper is a fairly abundant visitor. The specimen from Campeche represents the first record of the species from that state, although it is no less common there than elsewhere on the Peninsula.

With the exception of Isla Cozumel and Banco Chinchorro, the species has not heretofore been recorded from the islands, but this is undoubtedly due to the failure of collectors to take specimens, rather than to any recent change in distribution or increase in numbers.

WEIGHT. The two females weighed 33.1 and 37.2 grams.

CATOPTROPHORUS SEMIPALMATUS INORNATUS (Brewster).
Willet.

Symphemia semipalmatus inornatus Brewster, Auk, 4:145, 1887. (Larimer County, Colorado.)

RANGE. The species breeds in western North America from southern Canada south to Colorado, in eastern North America from Nova Scotia southward along the Atlantic and Gulf coasts to Tamaulipas, and in the Greater Antilles and northern Lesser Antilles; the race in the western portion of the range; winters on the Pacific Coast south to Peru and on the Gulf and Caribbean coasts to Colombia; recorded from Yucatán and Quintana Roo, including Islas Cozumel (Sharpe, 1896) and Holbox; the nominate form occupies the eastern range and winters primarily on the Gulf, Caribbean, and Atlantic coasts to northern Brazil.

SPECIMENS. Quintana Roo—Xcalac, 1 ♂, Feb. 3, 1949. Yucatán—Dzilam Puerto, 1 ♂, Dec. 5, 1950; Santa Clara, 1 ♂, Sept. 11, 1 ♂, Sept. 13, 1 ♂, Sept. 14, 2 ♀, Sept. 18, 1950, 1 ♂, 1 ♀, Oct. 1, 1952.

HABITAT. Coastal and insular.

REMARKS. Willets were extremely abundant on the flats behind Dzilam Puerto in early December 1950. Several flocks containing over 50 birds each were seen. On Isla Holbox the species was common, but less abundant.

However, other than at these two localities, the bird is rare on the Peninsula. My only records are from Xcalac, where a single bird was seen, and Celestún, where not more than ten were observed during several days of work.

In the British Museum there are ten specimens from Isla Cozumel. Mr. J. D. Macdonald has very kindly measured the wings of the series; all are large and fall within *C. s. inornatus*.

The nominate form is to be expected to occur on the Peninsula.

WEIGHT. A male weighed 244.2 grams.

ARENARIA INTERPRES MORINELLA (Linnaeus).
Ruddy Turnstone.

Streptilas morinella Linnaeus, Syst. Nat., ed. 12, 1:249, 1766. (Georgia.)

RANGE. The species breeds widely in the Arctic; the race in arctic North America; winters from the southern United States to Chile and Brazil; on the Peninsula recorded from all coasts, with the exception of Campeche, and on Cayo Arenas (Paynter, 1953), Arrecife Alacrán (Paynter, 1953), Isla Holbox (sight record), Isla Contoy (sight record), Isla Cozumel (Salvin, 1889), Cayo Culebra (sight record), and Isla Mujeres.

SPECIMENS. Quintana Roo—Xcalac, 1 ♀, Feb. 24, 1949; Isla Mujeres, 1 ♀, Dec. 22, 1950. Yucatán—Santa Clara, 1 ♀, Apr. 28, 1 ♂, Apr. 29, 1 ♀, May 31, 1952.

HABITAT. Coastal and insular.

REMARKS. The species is a fairly common visitant. It appears that some nonbreeding birds remain during the summer months, since a bird has been taken on May 31, and Friedmann, Griscom, and Moore (1950) recorded a bird collected in Yucatán on June 16.

WEIGHT. A female weighed 92.4 grams.

LIMNODROMUS GRISEUS HENDERSONI Rowan.
Dowitcher.

Limnodromus griseus hendersoni Rowan, Auk, 49:22, 1932. (Devil's Lake, Alberta.)

RANGE. The species breeds in southern Alaska eastward through Canada, probably to Ungava; the race in the interior of Canada; winters from Chesapeake Bay southward over the Caribbean and Gulf, probably to northern and northwestern South America; specimen referable to this race from Yucatán, and unassignable specimens from Isla Cozumel (Salvin, 1889) and Yucatán; *L. g. griseus* breeds in eastern Canada and winters probably primarily in the eastern Caribbean; *L. g. caurinus* breeds in Alaska and winters on the Pacific coast south to Peru.

SPECIMENS. Yucatán—Dzilam Puerto, 1 ♂, Dec. 5, 1950; Santa Clara, 1 ♂, Sept. 11, 1950, 1 ♂, May 31, 1952.

HABITAT. Coastal and insular.

REMARKS. The species is presumably a rare visitant on the Peninsula. Dr. Pitelka, who recently (1950) revised the genus *Limnodromus*, very generously examined these specimens and has concluded that the bird collected at Santa Clara in the fall of 1950, an adult, can be assigned without question to *L. g. hendersoni*.

The remaining specimens, first-year birds in molt, fall between *L. g. hendersoni* and the nominate form.

WEIGHT. A male weighed 79.4 grams.

CAPELLA GALLINAGO DELICATA (Ord).
Common Snipe.

Scolopax delicata Ord, in reprint Wilson, Am. Ornith., 9:218, 1825. (Pennsylvania.)

RANGE. The species is widely distributed in the Northern Hemisphere; the race breeds in the New World from the Subarctic south to the northern United States, and at high elevations to southern California, Baja California, and central Mexico; winters from the central United States to northern South America; on the Peninsula known only from Yucatán.

SPECIMENS. Yucatán—Santa Clara, 1 ♂, 1 ♀, Jan. 12, 1950.

HABITAT. Marshes.

REMARKS. These two specimens, from the Legters collection, are the first definite records of the species from the Peninsula. Cole (1906) had a questionable sight record from Chichén Itzá.

CALIDRIS CANUTUS RUFUS (Wilson).
Knot.

Tringa rufa Wilson, Am. Ornith., 7:43, 1813. (New Jersey.)

RANGE. The species breeds throughout much of the Arctic; the race in North America; winters from the northern United States to extreme southern South America; few records from intermediate zone; found once in Yucatán.

SPECIMENS. Yucatán—Dzilam Puerto, 2 ♂, Dec. 5, 1950.

HABITAT. Coastal.

REMARKS. The two specimens were secured when a local hunter attempted to collect a specimen of *Numenius americanus* and accidentally struck these two birds. The area was carefully scrutinized after it was discovered that this species was present, but no more were seen.

WEIGHT. They weighed 108.0 and 117.1 grams.

CALIDRIS ALBA (Pallas).
Sanderling.

Trynga alba Pallas, in Vroeg, Cat. Rais. d'Ois., Adumbr., p. 7, 1764. (Coast of North Sea.)

RANGE. A monotypic species breeding in the Holarctic; in the Western Hemisphere winters from southern United States to southern South America; recorded from the coasts of Quintana Roo (Griscom, 1926a) and Yucatán, on Cayos Arcas and Arrecife Alacrán (Paynter, 1953), on Isla Holbox (sight record), and on Isla Cozumel (Salvin, 1889).

SPECIMENS. Yucatán—El Cuyo, 2♂, Dec. 9, 1950.

HABITAT. Coastal and insular.

REMARKS. A relatively uncommon visitant.

WEIGHT. The birds weighed 46.9 and 50.0 grams.

CALIDRIS PUSILLA (Linnaeus).
Semipalmated Sandpiper.

Tringa pusilla Linnaeus, Syst. Nat., ed. 12, 1:252, 1766. (Santo Domingo.)

RANGE. Breeds in arctic North America and extreme northeastern Siberia; winters from coast of southeastern United States to extreme southern South America; recorded from Quintana Roo (Griscom, 1926a), including Isla Cozumel (Sharpe, 1896), and Yucatán.

SPECIMEN. Yucatán—Santa Clara, 1♂, Aug. 22, 1952.

HABITAT. Coastal and insular.

REMARKS. The only definite records of this species from Mexico are those from the Peninsula. It is presumed to be a more common visitant than the few records would seem to indicate, but it is undoubtedly frequently overlooked when in association with *C. minutilla*.

CALIDRIS MAURI (Cabanis).
Western Sandpiper.

Ereunetes mauri Cabanis, Jour. für Ornith., 4:420, 1856. (South Carolina.)

RANGE. Breeds in northern Alaska; winters from the United States to Peru; known from Cayos Arcas (Paynter, 1953), Isla Cozumel (Sharpe, 1896), and Yucatán.

SPECIMENS. Yucatán—Santa Clara, 2♂, 1♀, Sept. 13, 1950.

HABITAT. Coastal and insular.

REMARKS. This is another species which is undoubtedly more common than the number of records indicate.

CALIDRIS MINUTILLA (Vieillot).
Least Sandpiper.

Tringa minutilla Vieillot, Nouv. Dict. d'Hist. Nat., nouv. éd., 34:466, 1819. (Hali-fax, Nova Scotia.)

RANGE. Breeds in Alaska and Canada; winters south to Peru and Brazil; recorded from Campeche (Traylor, 1941), Quintana Roo, and Yucatán, and on Isla Holbox (sight record), Isla Cozumel, and Cayo Culebra.

SPECIMENS. Quintana Roo—Cayo Culebra, 1♀, Apr. 3, 1949; Isla Cozumel, 2♂, Jan. 5, 1949. Yucatán—Mérida, 1♀, Oct. 10, 1950; Santa Clara, 3♂, 2♀, Aug. 22, 1♂, Sept. 13, 1950.

HABITAT. Usually coastal and insular, but occasionally inland in the vicinity of water.

REMARKS. The Least Sandpiper is the most common of the sandpipers, but it is not very generally distributed along the coasts, owing to the presence of barren beaches or mangrove-covered mudflats. The only record from Campeche was secured by Traylor (1941) at Pacaytun, but the lack of coastal records probably merely reflects the neglect of this area by collectors.

WEIGHT. Two males weighed 18.3 and 18.7; one female 20.4 grams.

CALIDRIS FUSCICOLLIS (Vieillot).
White-rumped Sandpiper.

Tringa fuscicollis Vieillot, Nouv. Dict. d'Hist. Nat., nouv. éd., 34:461, 1819. (Paraguay.)

RANGE. Breeds in arctic North America; winters from Brazil southward; in Mexico recorded only from Quintana Roo, including Isla Cozumel (Salvin, 1889), and Yucatán (Sharpe, 1896), including Arrecife Alacrán (Kennedy, 1917).

SPECIMENS. Quintana Roo—Laguna Chacanbacab, 2♀, May 22, 1949.

HABITAT. Coastal, insular, and inland in the vicinity of water.

REMARKS. The specimens were collected from a flock of six. I have never seen the species elsewhere and it is presumed to be a rare spring transient.

Kennedy (1917) collected two specimens on Isla Pájaros, Arrecife Alacrán, on May 20, which he called "Baird's Sandpiper" (*Calidris bairdii*),

but Lowery and Newman (1954) have discovered that they were incorrectly identified and actually are *Calidris fuscicollis*.

WEIGHT. The birds weighed 33.5 and 40.0 grams.

Family RECURVIROSTRIDAE

HIMANTOPUS HIMANTOPUS MEXICANUS (Müller).

Black-necked Stilt.

Charadrius mexicanus Müller, Natursyst. Suppl., p. 117, 1776. (Mexico.)

RANGE. The species is widely distributed in the temperate and tropical regions of the world; the race from the central United States south to Peru and Brazil; extreme northern birds migratory; on the coasts throughout the Peninsula, and on Islas Holbox and Cozumel (Sharpe, 1896), Isla Mujeres (sight record), and Banco Chinchorro.

SPECIMENS. Quintana Roo—Cayo Centro, Banco Chinchorro, 1♂, Feb. 5, 1949. Yucatán—Santa Clara, 1♂, Aug. 25, 1♀, Sept. 11, 1♂, 1♀, Sept. 12, 1♀, Sept. 15, 1950.

HABITAT. Coastal and insular.

REMARKS. Stilts are fairly common wherever there are mudflats free of vegetation.

BREEDING. There are no breeding records from the Peninsula. The presence of birds in June on Cozumel (Sharpe, 1896) and in July in Campeche (Brodkorb, 1943a) is a fairly certain indication that it does breed there.

Family PHALAROPODIDAE

STEGANOPUS TRICOLOR Vieillot.

Wilson Phalarope.

Steganopus tricolor Vieillot, Nouv. Dict. d'Hist. Nat., nouv. éd., 32:136, 1819. (Paraguay.)

RANGE. Breeds from southern British Columbia east to southern Manitoba and south to central California and northern Indiana; winters from Peru southward; one record from Quintana Roo.

SPECIMEN. Quintana Roo—Laguna Chacanbacab, 1♂, May 19, 1949.

HABITAT. Known only from the shore of Laguna Chacanbacab.

REMARKS. A single emaciated specimen is the only one seen. As has been previously suggested (Paynter, 1950a), the bird may have been in a weakened condition, which would account for its presence so far south in mid-May.

WEIGHT. It weighed 30.0 grams.

Family STERCORARIIDAE

STERCORARIUS POMARINUS (Temminck).

Pomarine Jaeger.

Lestris pomarinus Temminck, Man. d'Ornith., p. 514, 1815. (Arctic regions of Europe.)

RANGE. Breeds in the Arctic; winters at sea throughout much of the world; specimens from near Cayos Arcas (Siebenaler, *in litt.*) and sight records from vicinity of Isla Contoy (Friedmann, Griscom, and Moore, 1950) and Arrecifes Triángulos.

HABITAT. Pelagic.

REMARKS. Jaegers are to be expected off the coasts of the entire Peninsula during the fall and winter months, but the lack of observers has limited the number of records. The only time I have seen the species was on August 30, 1952, when four birds were observed near Arrecifes Triángulos.

Family LARIDAE

LARUS ARGENTATUS SMITHSONIANUS Coues.

Herring Gull. Gaviota.

Larus smithsonianus Coues, Acad. Nat. Sci. Phila., Proc., 14:296, 1862. (Eastern and western coasts of North America.)

RANGE. The species is widely distributed in the Northern Hemisphere; the race in North America from Alaska east to Baffin Island and south to the Great Lakes and New England; winters south to the Antilles and Mexico; rarely to Panama; sight records from all coasts of the Peninsula and Islas Holbox and Mujeres.

HABITAT. Coastal and insular.

REMARKS. The species is comparatively uncommon; seldom are more than two birds seen at a time.

LARUS ATRICILLA Linnaeus.

Laughing Gull. Gaviota.

Larus atricilla Linnaeus, Syst. Nat., ed. 10, 1:136, 1758. (Bahamas.)

RANGE. Breeds locally from Nova Scotia southward along the Atlantic and Gulf coasts of the United States, in the Bahamas and Antilles, in the southern Gulf of Mexico, on the Caribbean coast of Central America and possibly South America, in southern California, and on the coast of north-

western Mexico; winters south to Brazil and Peru; known from all coasts of the Peninsula, and on Islas Cozumel (Salvin, 1889) and Contoy (sight record), and on Arrecife Alacrán (Kennedy, 1917); the species possibly divisible into an Antillean race and a continental race (*vide*, Parkes, 1952).

SPECIMEN. Quintana Roo—Bahía de Chetumal, 1 ♀, Feb. 23, 1949. Yucatán—Santa Clara, 1 ♂, Sept. 19, 1950.

HABITAT. Coastal and insular.

REMARKS. The Laughing Gull is more abundant than any other species of the genus, but I have never found it particularly numerous.

Cole (1906, p. 145) reported seeing "large flocks" of *Larus philadelphia* at Progreso. However, he did not record *Larus atricilla* from there and since there has never been another report of the species from anywhere along the Gulf coast of Mexico south of Tampico, it appears that he probably confused the two species, and that the large flocks he observed were in reality Laughing Gulls.

BREEDING. The inhabitants of Cayos Arcas informed me that this species breeds there in small numbers in the spring.

Four pairs were found nesting on Isla Pájaros, Arrecife Alacrán on May 20, 1912 (Kennedy, 1917). I was told by the lighthouse keepers on Arrecife Alacrán in 1952 that Laughing Gulls are fairly common nesters throughout the reef but they were not able to give me a reliable estimate of the number.

The species has not been recorded nesting anywhere in Quintana Roo but it is to be expected on Banco Chinchorro; perhaps on Cayo Lobos which has little vegetation. Although no gulls were seen on the Bank during Griscom's (1926b) visit in January nor on my visit in February, the species breeds on the cays off British Honduras (Salvin, 1864) and Banco Chinchorro appears equally suitable.

LARUS PIPIXCAN Wagler.
Franklin Gull.

Larus pipixcan Wagler, Isis, 5, col. 515, 1831. (Mexico.)

RANGE. Breeds in the interior of southern Canada and the northern United States; winters primarily on the western coast of South America; rarely in the Gulf of Mexico; one record from Yucatán (Saunders, 1896).

HABITAT. Coastal.

REMARKS. The only record of this species on the Peninsula was obtained in the autumn at Progreso (Saunders, 1896).

CHLIDONIAS NIGRA SURINAMENSIS (Gmelin).
Black Tern.

Sterna surinamensis Gmelin, Syst. Nat., 1:604, 1789. (Surinam.)

RANGE. The species breeds in Europe, western Asia, and North America; the race locally from Alaska south to California and east to Maine and Missouri; winters in South America; transient on the Peninsula in Yucatán and on Arrecife Alacrán.

SPECIMENS. Yucatán—Santa Clara, 2♂, Sept. 2, 1949, 1♂, 1♀, 1?, Aug. 28, 1950.

HABITAT. Coastal and insular.

REMARKS. Previously this transient was known in Yucatán from a single specimen from Río Lagartos (Hellmayr and Conover, 1948b).

On September 2, 1952, a flock of about 50 was seen over the shallow water near the center of Arrecife Alacrán.

HYDROPROGNE CASPIA (Pallas).
Caspian Tern.

Sterna caspia Pallas, Novi Comm. Acad. Sci., Petr., 14:582, 1770. (Caspian Sea.)

RANGE. Breeds locally in the Northern Hemisphere and in Australia and New Zealand; in Canada and the United States locally on lakes and on the central Atlantic and Gulf coasts, wintering on coasts of Mexico and the Greater Antilles; sight record from Isla Cozumel, Quintana Roo (Griscom, 1926b).

HABITAT. Known only from Isla Cozumel.

REMARKS. A single bird was observed by Griscom (1926b) in the harbor of San Miguel, Isla Cozumel.

STERNA HIRUNDO HIRUNDO Linnaeus.
Common Tern.

Sterna hirundo Linnaeus, Syst. Nat., ed. 10, 1:137, 1758. (Sweden.)

RANGE. Breeds in North America, Europe, and Asia; the nominate race in Europe and western Asia, and in North America from Mackenzie east to Newfoundland and south, locally, to the Gulf of Mexico, and possibly in the Antilles; North American birds winter from the west coast of Mexico south to Peru, and from Florida to Brazil, rarely to Patagonia; recorded from Yucatán (Hellmayr and Conover, 1948b) and Campeche (Austin, 1953).

HABITAT. Coastal.

REMARKS. A specimen from Río Lagartos (Hellmayr and Conover, 1948b) and two banded birds recovered in Yucatán and Campeche (Austin, 1953) are the only records of this species from the Peninsula known to me.

On a few occasions I have seen medium-sized terns along the coast of Yucatán and Quintana Roo, and in the vicinity of some of the islands, but was never sufficiently near to attempt identification. The birds may have been this species, or even *S. dougallii*, which has never been found in Mexico, although it breeds in British Honduras, and was questionably identified by Griscom (1926b) at Banco Chinchorro.

STERNA FUSCATA FUSCATA Linnaeus.
Sooty Tern. Gaviota.

Sterna fuscata Linnaeus, Syst. Nat., ed. 12, 1:228, 1766. (Santo Domingo.)

RANGE. The species is of pan-tropical distribution; the race breeds locally from the Dry Tortugas through the Bahamas and islands throughout the Caribbean, and on Ascension Island; ranges widely during other seasons; Peninsular records from Arrecife Alacrán (Kennedy, 1917).

HABITAT. Breeds on isolated islands; pelagic at other times.

REMARKS. Friedmann, Griscom, and Moore (1950) have stated that the Sooty Tern breeds on Cayos Arcas and Isla Mujeres, as well as on Arrecife Alacrán. During my visit to Isla Mujeres I inquired of the inhabitants but they assured me the species does not nest on the island. In fact, when shown pictures of the species they said it was entirely unknown to them. At Cayos Arcas I repeated this question but was assured that the species in question does not breed there, although the lighthouse keepers were familiar with this tern because of having seen it on Arrecife Alacrán.

In September I saw only five Sooty Terns on Isla Pérez, Arrecife Alacrán, but the inhabitants told me that many thousands breed throughout the reef, although the principal colony is on Isla Pérez. They were unable to estimate the size of the colony but said that during the nesting season the island is carpeted with eggs.

BREEDING. Kennedy (1917) found the season well underway in mid-May 1912. The people on the island said that the season is at a peak in May and June, and that most birds depart by late July or early August.

STERNA ALBIFRONS ANTILLARUM (Lesson).
Least Tern.

Sternula antillarum Lesson, Oeuvr. Buffon, éd. Levetque, 20:256, 1847. (Guadeloupe, Lesser Antilles.)

RANGE. The species is widely distributed throughout the more temperate regions of the world; the race breeds on the Atlantic and Gulf coasts of

the United States, from Bermuda southward through the Bahamas and the Antilles, and on islands off the coast of British Honduras and Venezuela; several records from Yucatán; three additional New World races on the Pacific Coast from southern California through Mexico, and one race from Louisiana north to Iowa and Ohio; the species winters south to Brazil and Peru, but subspecific identification of winter birds usually not possible.

SPECIMENS. Yucatán—Santa Clara, 1 ♂, Apr. 28, 1 ♀, May 31, 1952.

HABITAT. Coastal.

REMARKS. These specimens are in breeding plumage and are referable to *S. a. antillarum* without question. The only previous record of the species from the Peninsula is a single bird in the Chicago Museum, which was collected at Río Lagartos, and which was also identified as belonging to this race (Hellmayr and Conover, 1948b).

BREEDING. Although these two specimens were taken by a local collector, who did not note the condition of the gonads, the fact that both birds are in breeding plumage and were present so late, strongly suggests that they were resident. The species is known to breed in British Honduras (Salvin, 1864) and its residence in Yucatán would not be unexpected.

THALASSEUS MAXIMUS MAXIMUS (Boddaert).
Royal Tern. Gaviota.

Sterna maxima Boddaert, Table Pl. Enl., p. 58, 1783. (Cayenne.)

RANGE. The race breeds on the coast of the United States from Virginia to Texas, in the Bahamas and West Indies, and on both coasts of Mexico; an additional race in West Africa; North American birds winter south to Argentina and Peru; sight records from all coasts of the Peninsula and on Cayos Arcas, Triángulo Oeste, Arrecife Alacrán, Isla Holbox, Isla Mujeres, Isla Cozumel, Cayo Culebra, and Banco Chinchorro.

SPECIMENS. Quintana Roo—Bahía de Chetumal, 1 ♀, Feb. 23, 1949. Yucatán—Santa Clara, 1 ♂, 1 ♀, Sept. 18, 1950.

HABITAT. Coastal and insular.

REMARKS. The Royal Tern occurs regularly, but not abundantly, along the entire coast of the Peninsula and on most of the islands, with the exception of Cayos Arcas and Arrecife Alacrán, where they are very common.

BREEDING. The lighthouse keepers on Cayos Arcas and Arrecife Alacrán said that the species breeds on those islands in May and June. Friedmann, Griscom, and Moore (1950) also mentioned the species breeding at Río Lagartos, but they quoted no authority and I am unable to find any published record of Royal Terns nesting at this locality.

THALASSEUS SANDVICENSIS ACUFLAVIDUS (Cabot).Sandwich Tern. *Golondrina marina*.

Sterna acuflavida Cabot, Boston Soc. Nat. Hist., Proc., 2:257, 1847. (Tancah, Yucatán [= Quintana Roo].)

RANGE. The race breeds from North Carolina to Texas, in the Bahamas and Antilles, and off the coasts of the Yucatán Peninsula and British Honduras; winters from the Gulf of Mexico to Brazil; recorded from the coasts of Yucatán (Lawrence, 1869) and Quintana Roo and on Isla Cozumel (Salvin, 1889), Arrecife Alacrán, Triángulo Oeste (sight record), and Cayos Arcas (sight record); the nominate race in Europe, and on the Black and Caspian Seas.

SPECIMENS. Yucatán—Isla Pérez, Arrecife Alacrán, 4♂, 7♀, Sept. 1, 1852.

HABITAT. Primarily insular; rarely coastal.

REMARKS. If the species were looked for only on the coasts it would appear to be very rare. On the islands, however, it is more common.

Several hundred were seen on Arrecife Alacrán, five on Triángulo Oeste, and ten on Cayo Arenos.

BREEDING. Kennedy (1917) found 50 pairs breeding on Isla Pájaros, Arrecife Alacrán in mid-May 1914. I was told that the main colony is on Isla Desterrada where several hundred birds breed each year.

ANOÛS STOLIDUS STOLIDUS (Linnaeus).

Brown Noddy.

Sterna stolidus Linnaeus, Syst. Nat., ed. 10, 1:137, 1758. (West Indies.)

RANGE. The species breeds on islands throughout the tropical seas, with the exception of Oceania, and in the South Atlantic; the race from the Gulf of Mexico through the Caribbean and south to Tristan da Cunha; pelagic in the winter; in the vicinity of the Yucatán Peninsula known only from Arrecife Alacrán; *A. s. ridgwayi* on the west coast of Mexico and Central America; *A. s. galapagensis* in the Galapagos, and other races in the Old World.

SPECIMENS. Yucatán—Isla Pérez, Arrecife Alacrán, 2♂, 1♀, Sept. 1, 1♂, 1♀, Sept. 2, 1♀, Sept. 3, 1952.

HABITAT. Pelagic; breeds on Isla Pérez.

REMARKS. In early September few birds were to be found on Isla Pérez during the day, but at nightfall hundreds came in from the sea to roost.

BREEDING. Friedmann, Griscom, and Moore (1950) stated that the species breeds commonly on Isla Mujeres and Isla Contoy. Inquiries on Isla Mujeres revealed that the inhabitants were not familiar with the species

and if the species ever bred on that island it must have been many years ago. Isla Contoy appears more suitable, but no abandoned nests were found.

On Isla Pérez many hundreds of nests were seen, some of which contained addled eggs. No accurate estimate could be made of the number of nests on the island, but from what the lighthouse keepers said, combined with the evidence of nesting, well over 1000 birds must breed on the island.

Family RYNCHOPIDAE

RYNCHOPS NIGRA NIGRA Linnaeus.

Black Skimmer.

Rynchops nigra Linnaeus, Syst. Nat., ed. 10, 1:138, 1758. (South Carolina.)

RANGE. The species is distributed in the New World from the northeastern United States to southern South America; taxonomy unsettled; the nominate form breeds locally from Massachusetts (formerly) southward on the Atlantic and Gulf coasts, possibly to Yucatán, and on the Pacific coast from northern Mexico probably through Central America; winters throughout its range and casually in the West Indies; recorded from the coast of Yucatán, and on Islas Holbox (sight record) and Cozumel (Saunders, 1896), Quintana Roo; *R. n. cinerascens* and *R. n. intercedens* breed in South America.

SPECIMENS. Yucatán—Santa Clara, 2♂, Sept. 19, 1950.

HABITAT. Coastal and insular.

REMARKS. The species is apparently quite rare on the Peninsula, although it may have been more abundant at one time. I have seen skimmers only twice; once on Isla Holbox where four birds were seen and once at Celestún where there was a flock of about 50. However, Boucard (1883, p. 463) mentioned that Gaumer saw "many thousands . . . at any time at the mouths of the rivers." Since rivers are lacking in Yucatán, it is presumed that he was referring to La Ciénaga.

A specimen from Isla Cozumel, in the British Museum, has been referred to *R. n. intermedia* by Griscom (1935a) and Hellmayr and Conover (1948b), but the race was synonymized with the nominate form by Wetmore (1944b). From the discussion of Wetmore (1944b), it is apparent the *R. n. intermedia* is merely an immature stage of the nominate race. I have not examined the specimen in question, but it is an immature bird and without doubt should be placed in *R. n. nigra*. Since Friedmann, Griscom, and Moore (1950) listed only one race from all of Mexico, and made no comment regarding the Cozumel bird, it seems probable that they also considered it indistinguishable, and concurred with the revision by Wetmore (1944b).

BREEDING. Griscom (1935a, p. 544) stated that the species breeds at the

"mouth of Río Lagartos, tip of Yucatan Peninsula." I have not been able to discover a source for this statement, but apparently it was accepted by Hellmayr and Conover (1948b). Wetmore (1944b) suggested that the breeding record from this region required verification. Although an immature specimen was taken at Río Lagartos in June (Saunders, 1896), that alone is insufficient proof that it breeds there.

Family COLUMBIDAE

COLUMBA LEUCOCEPHALA Linnaeus.

White-crowned Pigeon.

Columba leucocephala Linnaeus, Syst. Nat., ed. 10, 1:164, 1758. (Bahama Islands.)

RANGE. A monotypic species ranging from the extreme tip of Florida through the West Indies and the islands off the Caribbean coast of Central America and the Yucatán Peninsula; resident on Isla Cozumel, visitant on Cayo Culebra (verbal communication), and once recorded from the mainland of Quintana Roo (Ridgway, 1916).

SPECIMEN. Quintana Roo—Isla Cozumel, 1 ♂, June 5, 1952.

HABITAT. Wooded islands.

REMARKS. When I visited Isla Cozumel in early January 1949, I saw no White-crowned Pigeons and was told that they are not present in the winter. However, Griscom (1926b) found the species fairly common at the northern end of the island in early February 1926, and winter specimens have been collected before (Salvadori, 1893).

In April I found a great many abandoned nests on Cayo Culebra but no birds. The inhabitants of the island told me that during August and September (?) immense numbers of pigeons were to be found but they were absent during the remainder of the year.

The species is known almost to desert certain islands in the Bahamas and the West Indies during the winter months (Bent, 1932; Bond, 1950), and it is apparent that the birds on the islands off the coast of Quintana Roo behave similarly. On Cozumel the population may merely shift to a more isolated portion of the island, where they are seldom observed, but it is unknown where the birds from Cayo Culebra winter.

BREEDING. The inhabitants of Cayo Culebra said that breeding takes place in August and September, but there was considerable debate among them in arriving at these dates, and I suspect that it might begin as early as June.

COLUMBA FLAVIROSTRIS FLAVIROSTRIS Wagler.
Red-billed Pigeon. Paloma. Xkukutkib. X-ukuch.

Columba flavirostris Wagler, Isis, 5, col. 519, 1831. (Veracruz.)

RANGE. The species ranges from extreme southern Texas to Costa Rica; the race from Sonora and the lower Rio Grande Valley to eastern Costa Rica; recorded from throughout the mainland of the Peninsula; other races on the islands off western Mexico and in western Costa Rica.

SPECIMENS. Quintana Roo—20 km. NW. Chetumal, 1 ♀, Nov. 1, 1948; Laguna Chacabacab, 1 ♂, May 20, 1949; Carrillo Puerto, 1 ♂, June 13, 1950; Ch'ich' 1 ♂, May 8, 1950; Laguna Chichancanab, 2 ♀, Mar. 10, 2 ♂, Mar. 12, 1951; 15 km. NW. Kantunil-Kin, 1 ♀, Dec. 13, 1950. Campeche—Champton, 1 ♀, Jan. 28, 1951.

HABITAT. In deciduous forest, but occurs within the rain forest region where there are clearings.

REMARKS. The species is almost absent from the western part of Yucatán, presumably because of the scarcity of suitable habitats and extreme hunting pressure. This was already apparent as long ago as the 1880's (Boucard, 1883).

BREEDING. The reproductive season is extended and may include all months of the year.

Specimens taken in December, March, and May were found to have enlarged gonads.

WEIGHT. Two males and three females weighed 236.1 and 241.3; and 245.6, 250.5, and 256.6 grams respectively.

COLUMBA CAYENNENSIS PALLIDICRISSA Chubb.
Pale-vented Pigeon.

Columba pallidicrissa Chubb, Ibis, 52:60, 1910. (Costa Rica.)

RANGE. The species breeds from southern Mexico to northern Argentina, eastern Peru; the race from Veracruz to northern South America, including Trinidad; twice found in southern Campeche (Traylor, 1941).

HABITAT. Rain forest.

REMARKS. Traylor (1941) collected two specimens at Pacaytun, in late January and early February, and found them associated with *Columba flavirostris*.

This pigeon, a rain forest form, is uncommon north of Guatemala and is not to be expected to range very far north on the Peninsula. Although flocks of *Columba flavirostris* were carefully scrutinized in the hope of finding the Pale-vented Pigeon associated with them, none was seen by me.

COLUMBA SPECIOSA Gmelin.
Scaled Pigeon. Chukib.

Columba speciosa Gmelin, Syst. Nat., 1:783, 1789. (Cayenne.)

RANGE. A monotypic form ranging from Veracruz to Paraguay; recorded from Yucatán (Salvadori, 1893), Campeche (Friedmann, Griscom, and Moore, 1950), and Quintana Roo.

SPECIMENS. Quintana Roo—46 km. W. Chetumal, 1 ♀, Aug. 20, 1 ♀, Aug. 22, 1950; Bacalar, 1 ♂, Feb. 14, 1 ♀, Feb. 17, 1 ♂, Oct. 28, 1952; Carrillo Puerto, 1 ♂, June 13, 1 ♂, June 21, 1950.

HABITAT. Rain forest and high, deciduous forest.

REMARKS. This species appears to be more rare than it actually is because of its habit of remaining hidden in the dense foliage of high trees, rather than flying when approached.

Apparently a specimen was last collected in Yucatán in 1901 at Xbac (Cole, 1906). Although it may have been overlooked by subsequent collectors, it is possible that it has become more rare owing to the removal of the forest. On the other hand, Cole (1906) was told that the species was present in the vicinity of Chichén Itzá only during the summer months. While the forest has been destroyed at Chichén Itzá and the species is no longer to be expected there, most recent collectors have worked in Yucatán during the winter months when, if the information provided Cole is true, the bird would not be found.

COLUMBA NIGRIROSTRIS Sclater.
Short-billed Pigeon.

Columba nigrirostris Sclater, Zool. Soc. Lond., Proc., 27:390, 1859. (Oaxaca.)

RANGE. A monotypic form ranging from Veracruz to eastern Panama; one record from Quintana Roo (Peters, 1913).

HABITAT. Rain forest.

REMARKS. This pigeon, a sedentary species of the rain forest, is comparatively rare north of Guatemala.

Friedmann, Griscom, and Moore (1950) included Yucatán within the range, but this appears to be an erroneous record, based on Ridgway's (1916) faulty citation of Peters' (1913) specimen from Quintana Roo.

ZENAIDURA MACROURA CAROLINENSIS (Linnaeus).
Mourning Dove.

Columba carolinensis Linnaeus, Syst. Nat., ed. 12, 1:286, 1766. (South Carolina.)

RANGE. The species breeds from southern Canada to Panama, on the Greater Antilles, and on islands off the western coast of Mexico; the race from Nova Scotia west to Wisconsin and Kansas and south to the Gulf Coast and the Bahamas; possibly in Yucatán; winters from southern breeding range through eastern and central Mexico, rarely to Panama; recorded from Isla Cozumel, Quintana Roo (Salvin, 1889), and Yucatán; *Z. m. marginella* breeds in western North America south to Oaxaca; winters to Panama; the nominate form breeds on the Greater Antilles and very rarely on the coast of Central America; two races on islands off western Mexico.

SPECIMEN. Yucatán—Telchác Puerto, 1♂, Aug. 8, 1950.

HABITAT. Coastal scrub and probably inland in deciduous forest.

REMARKS. This specimen, which is in the Legters collection, is apparently the third record of the species from the Peninsula, the first having been taken on Isla Cozumel (Salvin, 1889), and the second, a bird banded at Key West, Florida, was recovered at Mérida (Lincoln, 1936a).

Friedmann, Griscom, and Moore (1950) cited *Z. m. carolinensis* from Yucatán, and *Z. m. marginella* from Cozumel as well as Yucatán. Although *Z. m. marginella* is to be expected on the Peninsula, the specimen from Cozumel is immature and worn and its race cannot be determined (Macdonald, *in litt.*). There appears to be no published record of additional Peninsular specimens which might refer to the race. Although the authors of the check-list may have had unpublished banding records to support their contentions, they did not note it.

The presence of *Z. m. carolinensis* in Yucatán on August 8 is very puzzling. The date is extremely early for a migrant northern bird, and the conclusion is that it was a resident. *Z. m. macroura* has been found in British Honduras in mid-October (Ridgway, 1916) and is known to have bred in Panama (Griscom, 1935b). The presence of this form as a rare resident in Yucatán would not, therefore, be unexpected. The specimen, however, agrees in color with *Z. m. carolinensis* and its wing measures 147.0 millimeters, placing it without doubt in that race.

I have never seen the species on the Peninsula and would have concluded that the Legters specimen was either a very early migrant, or one that failed to migrate north the previous spring, except for one additional fact. Lawrence (1869) described a species from Yucatán which he called *Zenaidura yucatanensis*. The single specimen upon which he based the race was examined by Salvadori (1893), Ridgway (1916), and Peters (1934), and all concluded that it is a hybrid between a Mourning Dove and a Zenaida Dove. While there is little doubt that the Zenaida Dove must have

been the endemic *Zenaida aurita yucatanensis*, Ridgway (1916) even concluded that the other member of the pair was *Z. m. marginella*—in spite of the fact that the only record of the Mourning Dove on the Peninsula was from Cozumel and its race had never been determined!

Obviously, to produce a hybrid between the two species, a Mourning Dove must have been resident, or at least reproductively active, during the time it was on the Peninsula. Therefore, it seems logical to conclude that the recently collected specimen was a resident rather than an early migrant. Whether Mourning Doves, and particularly *Z. m. carolinensis*, are regular, but rare, or merely occasional residents on the Peninsula has yet to be determined.

ZENADA AURITA YUCATANENSIS Salvadori.

Zenaida Dove. Punab.

Zenaida yucatanensis Salvadori, Cat. Birds Brit. Mus., 21:384, 1883. (Río Lagartos, Yucatán.)

RANGE. The species is distributed throughout the Antilles, on the Bahama Islands, on the Florida Keys (formerly), and on the Yucatán Peninsula; the race is endemic to Yucatán and Quintana Roo, including Islas Holbox (Salvin, 1889), Cozumel (Salvin, 1889), and Mujeres.

SPECIMENS. Quintana Roo—Isla Mujeres, 1 ♂, Dec. 23, 1950. Yucatán—El Cuyo, 1 ♀, Dec. 9, 1 ♀, Dec. 10, 1950; Santa Clara, 1 ♂, Sept. 11, 1950, 1 ♂, Jan. 25, 1 ♂, Sept. 20, 1952.

HABITAT. Arid coastal and insular scrub.

REMARKS. *Zenaida* Doves range from Celestún across the tip of the Peninsula, and down the east coast to Boca Iglesia. As was noted by Boucard (1883), they seldom range more than a few kilometers inland.

WEIGHT. The male weighed 151.9 grams; two females 155.1 and 158.3 grams.

ZENADA ASIATICA ASIATICA (Linnaeus).

White-winged Dove. Paloma. Sakpakal.

Columba asiatica Linnaeus, Syst. Nat., ed. 10, 1:163, 1758. (Jamaica.)

RANGE. The species occurs from the southern United States to Costa Rica, from Ecuador to northern Chile, and from the southern Bahamas through the Greater Antilles; the nominate form breeds from southern Texas southward through eastern Mexico, including the entire Yucatán Peninsula and the islands of Cozumel (Salvin, 1889), Mujeres (Salvin, 1889), and Holbox, south to Nicaragua; also on the Bahamas, the Greater Antilles, and Old Providence Island; Texas birds known to winter south

to El Salvador; contiguous *Z. a. mearnsi* from the southwestern United States to Oaxaca; *Z. a. alticola* in the highlands of Guatemala.

SPECIMENS. Quintana Roo—Chetumal, 1♀, Nov. 30, 1948; Bacalar, 1♂, Feb. 18, 1952; Vigía Chico, 1♂, Mar. 30, 1949. Yucatán—Santa Clara, 1♂, Aug. 7, 1♂, Aug. 28, 1♂, Aug. 29, 1♂, Sept. 2, 1950. Campeche—Champotón, 1♂, Jan. 24, 1951.

HABITAT. Chiefly in coastal scrub and deciduous forest, but occasionally in clearings within the rain forest zone.

REMARKS. It is very likely that northern birds winter on the Peninsula, but as yet there is no proof of this assumption.

BREEDING. The specimen taken in late March was reproductively active. The birds collected in late November and late January exhibited no indications of breeding. The remaining birds were not collected by me and the condition of their gonads was not recorded.

WEIGHT. A male and a female weighed 168.0 and 150.2 grams respectively.

COLUMBIGALLINA PASSERINA PALLESCENS (Baird).

Common Ground-Dove. Tórtola. Mukuy.

Chamaepelia passerina ? var. *pallenscens* Baird, Acad. Nat. Sci. Phila., Proc., 1859:305, 1860. (Cape San Lucas, Baja California.)

RANGE. A highly polymorphic species distributed from the southern United States to Brazil and Ecuador, in the Bahamas, and in the Antilles; the race from Colorado southward through southern California and southwestern Texas to British Honduras and Guatemala; throughout the Peninsula including Islas Holbox (Salvin, 1889), Mujeres (Salvin, 1889), and Cozumel; contiguous races are the nominate form in southeastern United States and *C. p. neglecta* from Honduras to Costa Rica.

SPECIMENS. Quintana Roo—Chetumal, 1♀, Nov. 15, 1♂, Dec. 4, 1♀, Dec. 8, 1♂, 2♀, Dec. 27, 1948; Isla Cozumel, 2♀, Jan. 3, 1949. Yucatán—Celestún, 1♂, 1♀, Jan. 13, 1951; Sisal, 1♂, 1♀, Jan. 6, 1951; Uxmal, 1♂, Jan. 16, 1951; Santa Clara, 1♂, 1♀, Aug. 24, 1♂, Aug. 25, 1♂, Aug. 28, 1♂, Aug. 29, 1♂, Sept. 5, 1950; Xocempich, 1♂, Oct. 4, 1950; Mérida-Progreso Rd., 1♂, Sept. 7, 1♀, Sept. 8, 1950; Mérida, 2♀, Oct. 6, 1950. Campeche—Pueblo Nuevo, 1♂, Sept. 22, 1950.

HABITAT. Most abundant in fields, villages, and roadsides; absent from forests.

BREEDING. Breeding apparently takes place throughout the year.

WEIGHT. Five males had a mean weight of 43.24 ± 2.36 and seven females 40.80 ± 3.11 grams.

COLUMBIGALLINA TALPACOTI RUFIPENNIS (Bonaparte).

Ruddy Ground-Dove. Tórtola. Mukuy.

Chamaepelia rufipennis Bonaparte, Compt. Rend. Acad. Sci., Paris, 40:22, 1855.
(Cartagena, Colombia.)

RANGE. The species occurs from Mexico to Bolivia and northern Argentina; the race in eastern Mexico from Tamaulipas southward through Central America to northern South America; throughout the Peninsula and on Isla Cozumel (Ridgway, 1885); *C. t. eluta* in western Mexico.

SPECIMENS. Quintana Roo—Chetumal, 1♀, Nov. 9, 1♂, Nov. 27, 1948, 1♂, June 1, 1950; Ucum, 1♂, 1♀, Feb. 2, 1952; Carrillo Puerto, 1♀, Apr. 26, 1♂, Apr. 27, 1♂, 1♀, June 7, 1♀, June 15, 1♂, June 16, 1950; Tabi, 1♀, Mar. 10, 1♀, Mar. 14, 1♀, Mar. 17, 1949. Yucatán—Sucopó, 1♀, Apr. 21, 1949; Mérida, 1♂, 1♀, Oct. 5, 2♂, 1♀, Oct. 10, 1950; Xocempich, 1♀, Sept. 28, 1♂, 1♀, Sept. 30, 1950, 2♂, Nov. 24, 1951. Campeche—Champotón, 1♂, 2♀, Jan. 21, 1951.

HABITAT. Occurs in open country over the entire Peninsula.

REMARKS. The differences in ecological requirements which permit *C. passerina pallescens* and *C. talpacoti rufipennis* to co-exist are not readily apparent. The species have never been seen to flock together, but both frequently occur in the same general area and in identical habitats. *C. talpacoti rufipennis* appears to be slightly less abundant over the entire Peninsula and seems more often found in uninhabited regions and less often in larger villages and towns. It is of interest to note that Haverschmidt (1953) found the reverse to be true in Surinam, i.e., *C. talpacoti* is more common in towns than *C. passerina*. The inter-relations between these sibling species presents a provocative problem but one that might be more conveniently studied than most similar cases.

BREEDING. The reproductive season probably extends throughout the year, although it may reach a peak in March.

WEIGHT. Two males weighed 42.9 and 53.8 grams while seven females had a mean weight of 50.70 ± 4.00 , with a range from 45.8 to 55.9 grams.

COLUMBIGALLINA MINUTA INTERRUPTA (Griscom).

Plain-breasted Ground-Dove.

Chamaepelia minuta interrupta Griscom, Am. Mus. Novitates, No. 379:4, 1929.
(Secaquim, Guatemala.)

RANGE. The species ranges from southeastern Mexico to Panama and locally in South America to Paraguay; the race from Veracruz to El Salvador; one record from Campeche (Ridgway, 1916).

REMARKS. Although this species may easily be confused with *C. talpacoti*,

it must be extremely rare since none was seen in spite of the careful attention given to all ground-doves.

CLARAVIS PRETIOSA (Ferrari-Perez).
Blue Ground-Dove. Tórtola Azul. Tuch Mukuy.

Peristera pretiosa Ferrari-Perez, U. S. Nat'l Mus., Proc., 9:175, 1886. (Jalapa, Veracruz.)

RANGE. A monotypic form ranging from Tamaulipas southward over eastern Mexico, including Yucatán (Salvadori, 1893), Quintana Roo, and Campeche, to Paraguay.

SPECIMENS. Quintana Roo—Chetumal, 1♂, Nov. 27, 1♂, Dec. 7, 1948; 25 km. W. Chetumal, 1♀, Aug. 14, 1950; 46 km. W. Chetumal, 1♂, 1♀, Feb. 13, 1949; Bacalar, 1♀, Feb. 15, 1♂, Feb. 19, 1952; Carrillo Puerto, 1♂, May 23, 1♂, June 6, 1950; Tabi, 2♂, Mar. 11, 1949, 1♀, Apr. 2, 1953; Kantunil-Kín, 1♂, Apr. 23, 1949. Campeche—Ichek, 1♂, 1♀, Sept. 25, 1950.

HABITAT. Clearings within rain forest and more rarely in those of high deciduous forest.

REMARKS. The species is fairly generally distributed throughout Quintana Roo and Campeche, but is considerably less common in Yucatán.

It occurs throughout the year in Quintana Roo and Campeche. Its status during the summer months in Yucatán is unknown owing to the absence of collectors during that season and also to the comparative rarity of the species. I have seen these birds in late April in Yucatán and presume that the species is a permanent resident there.

BREEDING. Specimens collected by me in February and March were breeding, while those taken in November and December were not. The remainder of the specimens, unfortunately, bear no notations concerning reproductive activity.

WEIGHT. Five males weighed 66.4, 68.7, 73.1, 75.6, and 75.7 grams; one female 72.3 grams.

LEPTOTILA VERREAUXI FULVIVENTRIS Lawrence.
White-tipped Dove. Tsutsuy.

Leptotila fulviventris Lawrence, New York Acad. Sci., Ann., 2:287, 1882. (Yucatán.)

RANGE. The species occurs from southern Texas through Mexico and Central America to Argentina; the race throughout the Yucatán Peninsula, north to southern Veracruz, and south to British Honduras and northeastern Guatemala; *L. v. angelica* contiguous to the north and *L. v. bangsi* to the south.

SPECIMENS. Quintana Roo—Chetumal, 1♂, Feb. 24, 1949, 1♂, Aug. 10, 1950; Bacalar, 1♀, Feb. 13, 1♂, Feb. 18, 1952; Tabi, 1♀, Mar. 14, 1♂, 1♀, Mar. 16, 1949; Carrillo Puerto, 1♀, June 12, 1950; Kantunil-Kín, 1♀, Apr. 22, 1949; Xcan, 1♀, Apr. 29, 1949. Yucatán—Xocempich, 1♀, May 12, 1949, 1♂, June 30, 1952; Santa Clara, 1♀, Nov. 6, 1950. Campeche—Champotón, 1♂, Jan. 21, 1♀, Jan. 23, 1♂, Jan. 27, 1♂, 1♀, Jan. 28, 1951.

HABITAT. Generally distributed throughout the zone of deciduous forest and in second growth of rain forest areas. Also, occasionally in lighter rain forest. Rare in coastal scrub.

REMARKS. This species is one of the more common, primarily terrestrial, doves on the Peninsula, but it is shy and more often heard than seen.

BREEDING. I found the species breeding from late January to late April. Nothing is known of the breeding activity of summer birds.

WEIGHT. Four males weighed 152.8, 159.2, 165.4, and 190.4 grams and two females 161.4 and 165.4 grams.

LEPTOTILA JAMAICENSIS GAUMERI (Linnaeus).

Caribbean Dove. Tsutsuy.

Engyptilia gaumeri Lawrence, New York Acad. Sci., Ann., 3:157, 1885. (Silam [= Dzilam], Yucatán.)

RANGE. The species occurs on the islands of Grand Cayman, Jamaica, and St. Andrews, and on the Yucatán Peninsula, including its adjacent islands; the race endemic to Yucatán, Campeche, and Quintana Roo, including Islas Holbox (Salvin, 1889), Mujeres, and Cozumel.

SPECIMENS. Quintana Roo—Agua Blanca, 1♂, June 6, 1949; 24 km. NW. Xtocomo, 1♀, Feb. 24, 1♂, Feb. 25, 1951; Carrillo Puerto, 1♀, Dec. 27, 1947; 1♂, June 6, 1♂, June 10, 1♂, June 16, 1950; 5 km. NW. Vigía Chico, 1♂, Apr. 9, 1949; Isla Cozumel, 1♂, Jan. 10, 1949; Isla Mujeres, 1♀, Dec. 26, 1950. Campeche—Champotón, 1♂, Jan. 24, 1951.

HABITAT. Chiefly a bird of deciduous forest, but occurs at times in heavy rain forest.

REMARKS. This species has not previously been recorded from Campeche or on the mainland of Quintana Roo.

In common with the two other species of *Leptotila* occurring on the Peninsula, *L. jamaicensis* is shy and difficult to see. Since at times the three species occur in the same habitat, they cannot be identified in the field on the basis of their ecology alone. Frequently, when hidden in thickets, it is necessary to collect the dove before it can be identified.

Owing to the obstacles in field identification, it is difficult to estimate the relative abundance of the species, or even to be certain of their preferred habitats. It appears, however, that *L. jamaicensis* is slightly less abundant than *L. verreauxi* in the deciduous forest and in the second growth of the rain forest area. Surprisingly, it may be more common than *L. verreauxi* in the rain forest. At Agua Blanca, on the Río Hondo, I was amazed to

find this species quite numerous in heavy rain forest where *L. plumbeiceps* occurred and where *L. verreauxi* was absent.

BREEDING. Specimens exhibiting gonadal activity were collected from late February to early June. Lacking summer specimens, the duration of the reproductive period is not known.

WEIGHT. Three males weighed 165.7, 180.2, and 190.3 grams; two females 140.3 and 153.8 grams.

LEPTOTILA PLUMBEICEPS PLUMBEICEPS Sclater and Salvin.
Gray-headed Dove. Tsutsuy.

Leptotila plumbeiceps Sclater and Salvin, Zool. Soc. Lond., Proc., 36:59, 1868.
(Vera Paz, Guatemala.)

RANGE. The species ranges from eastern Mexico to Colombia; the race from Tamaulipas to Colombia, with the exception of portions of Panama; on the Peninsula in southern Campeche and the southern half of Quintana Roo.

SPECIMENS. Quintana Roo—Laguna Chacabacab, 1 ♀, May 20, 1949; Agua Blanca, 1 ♀, June 4, 1949; Bacalar, 1 ♀, Oct. 27, 1952; Carrillo Puerto, 1 ♀, Apr. 13, 1949. Campeche—2 km. N. Aguada Seca, 2 ♀, Feb. 10, 1951.

HABITAT. Chiefly heavy rain forest, but occasionally in lighter rain forest.

REMARKS. The species has not been recorded previously from the Peninsula. It is apparently rare, but, owing to confusion with the other species of *Leptotila*, it is probably often overlooked.

BREEDING. The specimen collected in June had an enlarged ovary, and one of those taken in February was just becoming sexually active. The remaining February bird, a juvenal, and the one taken in May were not breeding; the collector of the April and October birds did not note the condition of the gonads.

WEIGHT. A mature female weighed 162.5 and a juvenal female 125.7 grams.

GEOTRYGON MONTANA MONTANA (Linnaeus).
Ruddy Quail-Dove. K'ankab Tsutsuy.

Columba montana Linnaeus, Syst. Nat., ed. 10, 1:163, 1758. (Jamaica.)

Range. The species ranges from Veracruz and southern Sinaloa to Paraguay and southern Brazil, and in the Antilles; the nominate form throughout the range with the exception of the Lesser Antilles; recorded from southern Quintana Roo and Campeche, and once from northern Yucatán (Salvadori, 1893).

SPECIMENS. Quintana Roo—Agua Blanca, 1 ♂, June 2, 1 ♀, June 3, 1 ♀, June 6, 1949. Campeche—2 km. N. Aguada Seca, 1 ♂, Feb. 9, 1951.

HABITAT. Heavy rain forest, but once (Salvadori, 1893) from low deciduous forest.

REMARKS. The species is common at the base of the Peninsula where it is found in high rain forest with little vegetation on the ground. Its occurrence at Temax, Yucatán (Salvadori, 1893), a region of low deciduous forest, was probably accidental.

BREEDING. The specimen collected in February had slightly enlarged gonads. Of the June birds, a male and a female were breeding, while the remaining bird, a juvenal female, was not.

WEIGHT. A male weighed 144.6 grams.

Family PSITTACIDAE

ARA MACAO (Linnaeus).

Scarlet Macaw.

Psittacus macao Linnaeus, Syst. Nat., ed. 10, 1:96, 1758. (South America.)

RANGE. A monotypic species ranging from southern Tamaulipas to Amazonia; sight records from southern Campeche (Traylor, 1941).

HABITAT. Rain forest.

REMARKS. Traylor (1941) recorded macaws on several occasions at Pacaytun.

I had expected to find the species along the Río Hondo, but it was never seen. The inhabitants were questioned repeatedly but none knew of its existence in that region.

ARATINGA ASTEC ASTEC (Souancé).

Olive-throated Parakeet. Lorito. Xk'ali'i.

Conurus astec Souancé, Rev. et Mag. Zool., 9:97, 1857. (Mexico.)

RANGE. The species occurs from eastern Mexico to western Panama; *A. a. vicinalis* from central Tamaulipas to northern Veracruz; the nominate form for the remainder of the range; on the Peninsula in Campeche (Traylor, 1941), Yucatán, and Quintana Roo, including Isla Holbox (Salvin, 1889).

SPECIMENS. Quintana Roo—Chetumal, 1♀, Nov. 9, 1♀, Nov. 11, 1♂, 1♀, Dec. 9, 1♂, Dec. 18, 1949; 7 km. W. Chetumal, 1♀, Nov. 7, 1948; Tabi, 2♂, Mar. 10, 1949; 15 km. NW. Kantunil-Kín, 1♀, Dec. 14, 1950; Xcan, 1♀, Apr. 29, 1949. Yucatán—Santa Clara, 1♂, 1♀, Oct. 27, 1951.

HABITAT. Most common in deciduous forest and scrub, but also occurs in clearings in the rain forest region.

REMARKS. This bird is by far the most common parrot on the Peninsula.

I did not find it on Isla Holbox, although Gaumer collected seven speci-

mens there (Salvadori, 1891). It is very likely that the replacement of the scrub by *cocales* accounts for its present reduced numbers, or absence, on this island.

BREEDING. None of the specimens collected was found to be breeding, presumably because of the seasons in which they were taken. Nesting occurs in the spring, according to the local people.

WEIGHT. Four males weighed 71.5, 75.2, 76.1, and 80.2 grams; one female 76.1 grams.

PIONOPSITTA HAEMATOTIS HAEMATOTIS (Sclater and Salvin).
Brown-hooded Parrot.

Pionus haematotis Sclater and Salvin, Zool. Soc. Lond., Proc., 28:300, 1860. (Vera Paz, Guatemala.)

RANGE. The species ranges from southern Mexico to Colombia and Ecuador; the nominate form from Veracruz, and southern Campeche and Quintana Roo, to western Panama.

SPECIMENS. Quintana Roo—Ucum, 2♀, Feb. 23, 1952; 46 km. W. Chetumal, 2♂, 2♀, Aug. 21, 1950; Laguna Chacabacab, 1♀, May 13, 1♂, May 22, 1♀, May 23, 1949. Campeche—2 km. N. Aguada Seca, 1♂, Feb. 9, 1♂, Feb. 10, 1950.

HABITAT. Heavy rain forest.

REMARKS. Previously Brown-hooded Parrots were recorded on the Peninsula only at El Vapor (Brodkorb, 1943a). They are, however, fairly common in the heavy forest at the base of the Peninsula but are not so conspicuous an element of the avifauna as most parrots. They are never seen in large flocks, five or six birds being the size of most groups, and are usually very quiet. When approached, instead of flying off in noisy alarm, they remain silent in high trees. Their detection is almost always a matter of chance.

BREEDING. One male taken near Aguada Seca in mid-February had very enlarged testes while the other bird was just becoming reproductively active. Of those collected at Laguna Chacabacab in May, the two females had slightly enlarged gonads but the male exhibited no indications of breeding.

WEIGHT. A male with enlarged gonads weighed 164.6; a nonbreeding male 160.7 grams.

PIONUS SENILIS SENILIS (Spix).
White-crowned Parrot. Loro Pimiento. Xt'ut'.

Psittacus senilis Spix, Aves Bras., 1:42, 1824. (Veracruz.)

RANGE. The species occurs from Mexico to Panama; the race from San Luis Potosí through eastern and southern Mexico, including Campeche

(Traylor, 1941) and Quintana Roo, to Honduras or Nicaragua; *P. s. decoloratus* for remainder of range.

SPECIMENS. Quintana Roo—Chetumal, 1♀, Dec. 4, 1948; 46 km. W. Chetumal, 1♀, Feb. 12, 1949; Bacalar, 1♂, Feb. 17, 1♂, Feb. 19, 1952.

HABITAT. Rain forest.

REMARKS. Although Traylor (1941) referred his specimens from Matamoros to *P. s. decoloratus*, mine are typical of the nominate form. In fact, from the limited material which I have seen, it appears that *P. s. decoloratus* is a very weak race, or possibly invalid, as suggested by Brodkorb (1943a).

The species is relatively common in the heavier rain forest at the base of the Peninsula. It has not been recorded from Yucatán, although it is listed from there, without supporting data, by Friedmann, Griscom, and Moore (1950).

AMAZONA XANTHOLORA (Gray).
Yellow-lored Parrot. Loro. E'xikin.

Chrysotis xantholora Gray, List Bds. Brit. Mus., Psittac., p. 83, 1859. (Honduras = *errore*.)

RANGE. Endemic to the Yucatán Peninsula, including Isla Cozumel (Salvin, 1885), and northern British Honduras.

SPECIMENS. Quintana Roo—Bacalar, 1♂, Feb. 6, 1952; 12 km. N. Bacalar, 1♂, Apr. —, 1950; Carrillo Puerto, 1♂, May 11, 1♂, 1♀, June 7, 1950; Tabi, 1♂, Mar. 17, 1949, 1♀, Apr. 1, 1953. Yucatán—Xocempich, 1♂, Nov. 17, 1949. Campeche—Champotón, 3♂, 1♀, Jan. 21, 1♂, Jan. 22, 1♀, Jan. 24, 1♂, Jan. 27, 1951.

HABITAT. Primarily a species of deciduous forest, occurring less frequently in light rain forest, and apparently absent from heavy rain forest.

REMARKS. Owing to the difficulty in differentiating *A. xantholora* from its sibling species *A. albifrons*, when in the field, it is still not possible to present more than a tentative account of the differences in habitat preferences which probably exist between the two species.

It appears, however, that *A. xantholora* is more abundant in the deciduous forest, and *A. albifrons* in the rain forest. Although at times both species may occur in the same general area, I have never found them associated in a single flock, and always one species is more abundant than the other, depending on the nature of the habitat.

At Champotón a minimum of 1500 *A. xantholora* roosted nightly in an area of several square acres of second growth. In the late afternoon the birds could be approached quite closely and watched through binoculars. In spite of a very detailed search, extending over a period of one week, not a single *A. albifrons* could be found within the group.

Traylor (1941) collected a series of seven *A. xantholora* at Chichén Itzá

but failed to find *A. albifrons*. Apparently he was influenced by earlier reports, which stated that *A. xantholora* is an uncommon species, and failed to believe his own observations, since he concluded that although he collected only *A. xantholora*, the flocks must have been composed of both species and that it was merely through chance that all his specimens were *A. xantholora*. Interpreting this in the light of my observations, I believe that *A. xantholora* is the more common species at Chichén Itzá and Traylor's findings were not unexpected.

BREEDING. The male taken in mid-March was in breeding condition. The remaining spring specimens were not collected by me and there are no notations as to the condition of their gonads. No fall or winter bird was reproductively active.

WEIGHT. Five males weighed 199.5, 206.6, 226.7, 228.8, and 232.2 grams; two females 202.1 and 224.9 grams.

AMAZONA ALBIFRONS NANA Miller.
White-fronted Parrot. Loro.

Amazona albifrons nana Miller, Am. Mus. Nat. Hist., Bull., 21:349, 1905. (Calotmul, Yucatán.)

RANGE. The species ranges from northwestern Mexico to Costa Rica; the race from southern Veracruz to western Costa Rica; on the entire Yucatán Peninsula; the nominate form over the remainder of Mexico, with the exception of Sonora, Sinaloa, and Durango where replaced by *A. a. saltuensis*.

SPECIMENS. Quintana Roo—Chetumal, 1♀, Dec. 21, 1948, 1♂, Jan. 20, 1949; Bacalar, 1♀, Feb. 19, 1952; Tabi, 1♂, Mar. 25, 1953; Laguna Chichancanab, 1♂, Mar. 11, 1951. Campeche—2 km. N. Aguada Seca, 1♂, 1♀, Feb. 7, 2♂, 1♀, Feb. 8, 1♂, Feb. 9, 1951.

HABITAT. Occurs most commonly in rain forest of moderate height, less commonly in deciduous forest, and rarely in high rain forest.

REMARKS. *A. albifrons* appears to be less common than *A. xantholora*, but this may be merely because it is often found in habitats where it can be seen less readily.

Wetmore (1943) found a specimen from Apazote, Campeche, to have a wing length of 175.0 millimeters, which overlaps the lower limits of the nominate form, as given by him. In my series, one specimen from two kilometers north of Aguada Seca, Campeche, also has a wing length of 175.0 millimeters, but the remainder of the specimens are smaller. The series is generally slightly paler and more yellow than *A. a. albifrons* and the minor overlap in wing measurement of a few specimens from Campeche hardly seems significant enough to consider them intermediate between the two races, as suggested by Friedmann, Griscom, and Moore (1950).

BREEDING. Several of the specimens collected in Campeche in early

February were just beginning to exhibit gonadal activity. No actual breeding records are available from the Peninsula, but Van Tyne (1935) found a pair breeding in Petén in early April.

WEIGHT. Five males weighed 188.2, 199.4, 203.5, 234.3, and 241.7 grams; four females 190.6, 196.1, 196.3, and 206.0 grams.

AMAZONA AUTUMNALIS AUTUMNALIS (Linnaeus).
Yellow-cheeked Parrot. Loro.

Psittacus autumnalis Linnaeus, Syst. Nat., ed. 10, 1:102, 1758. (Southern Mexico.)

RANGE. The species is distributed from eastern Mexico to Ecuador and northern Brazil; the race from Tamaulipas to Honduras and Ruatan Island; on the Peninsula in extreme southern Quintana Roo and Campeche.

SPECIMENS. Quintana Roo—Chetumal, 1 ♂, Dec. 13, 1 ♂, Dec. 14, 1 ♂, Dec. 20, 3 ♂, 2 ♀, Dec. 29, 1948. Campeche—2 km. N. Aguada Seca, 1 ♂, Feb. 9, 1951.

HABITAT. Rain forest, but wintering, at least occasionally, in deciduous second growth within the rain forest zone.

REMARKS. This species occurred in large flocks on the outskirts of Chetumal during the winter of 1948–49. They were found in *milpas* which had been abandoned for many years and which contained much brush and large deciduous trees. I was told that every winter the parrots are to be found in the area but during the breeding season they move into the rain forest. The species has not been recorded previously from Quintana Roo.

Traylor (1941) saw the species regularly in southern Campeche during the winter, but never more than a few birds at a time. I had the same experience when at Aguada Seca.

BREEDING. The bird taken in February had slightly enlarged gonads. Although there is no definite breeding record from the Peninsula, I was assured by the local people that this species does breed in the area since they often obtain young from the nests for pets.

WEIGHT. Seven males weighed 314.0, 328.1, 372.8, 374.0, 393.0, 478.7, and 484.7 grams; two females 325.0 and 332.0 grams.

AMAZONA FARINOSA GUATEMALAE (Sclater).
Blue-crowned Parrot.

Chrysotis guatemalae Sclater, Ibis, 2:44, 1860. (Guatemala and Honduras.)

RANGE. The species occurs from southern Mexico to Amazonia and Ecuador; the race from Veracruz to Honduras; on the Peninsula in southern Quintana Roo and Campeche.

SPECIMENS. Quintana Roo—46 km. W. Chetumal, 1 ♂, 1 ♀, Apr. —, 1949. Campeche—20 km. N. Escárcega, 3 ♂, Mar. 3, 2 ♂, Mar. 4, 1951.

HABITAT. Rain forest.

REMARKS. This species has not been reported before from the Peninsula.

The only locality where I have seen the species was 20 kilometers north of Escárcega where several hundred were found feeding on the fruit of the *ramón*. The specimens from Quintana Roo were taken by my local collector during my absence from the country.

The Yucatán Peninsula and Guatemala have been included consistently within the range of *Amazona ochrocephala*, although I have been able to find no record of its occurrence in either locality. Salvin (1866) appears to have been responsible for this error, when he included Guatemala and Yucatán within the range without any qualifying comment. Later he modified his original statement (1871, p. 100) by saying, "In Guatemala I have no certain knowledge of its occurrence though I have little doubt it may be found at Peten and the adjoining districts of Yucatán." I concur with this statement, but the species must be extremely rare in both places, since after more than 80 years it still has not been collected.

I have seen captive *A. ochrocephala* at Champotón, but was told that they had been purchased in Veracruz.

BREEDING. Local people assured me that *A. farinosa* breeds in the heavy rain forest of Quintana Roo and Campeche, although I have no observation to confirm this statement.

WEIGHT. Five males weighed 601.6, 610.0, 611.2, 623.2, and 632.9 grams.

Family CUCULIDAE

COCYZUS ERYTHROPHALMUS (Wilson).

Black-billed Cuckoo.

Cuculus erythrophthalma (sic) Wilson, Am. Ornith., 4:16, 1811. (Near Philadelphia, Pennsylvania.)

RANGE. A monotypic species which breeds from southern Canada south to Kansas and Georgia; winters in northwestern South America; one record from Isla Cozumel (Salvin, 1889).

COCYZUS AMERICANUS AMERICANUS (Linnaeus).

Yellow-billed Cuckoo.

Cuculus americanus Linnaeus, Syst. Nat., ed. 10, 1:111, 1758. (South Carolina.)

RANGE. The species breeds from southern Canada over much of the United States to Mexico and the West Indies; the race from southeastern Canada through the eastern United States to Nuevo León, probably to Veracruz, and possibly on the Yucatán Peninsula; also in the Bahamas, the Greater Antilles, and probably on the northern Lesser Antilles; winters in

South America south to Argentina; recorded on the Peninsula from Quintana Roo, including Isla Cozumel (Salvin, 1889), Yucatán, and on Cayos Arcas, Banco Campeche (sight record, Paynter, 1953); *C. a. occidentalis* breeds from British Columbia to Baja California and Sinaloa; winter range unknown.

SPECIMENS. Quintana Roo—Carrillo Puerto, 1♂, May 5, 1♂, June 10, 1♀, June 21, 1950. Yucatán—Providencia, 1♂, Aug. 8, 1950; Dzidzantún, 1♀, Aug. 20, 1952; Santa Clara, 1♂, Sept. 13, 1950.

REMARKS. Previous to this collection, the species had been known on the Peninsula from one specimen collected on October 19 at Chichén Itzá (Traylor, 1941), and one specimen collected on Isla Cozumel in April (Shelley, 1891).

BREEDING. The collection, by Legters, of two cuckoos at Carrillo Puerto as late as mid-June, strongly suggests that the species may breed on the Peninsula. It is extremely unfortunate that no notation was made of the condition of the gonads in these specimens.

COCCYZUS MINOR CONTINENTALIS van Rossem.
Mangrove Cuckoo.

Coccyzus minor continentalis van Rossem, Harvard, Mus. Comp. Zool., Bull., 77:389, 1934. (Volcán de Santa Ana, Sonsonate, El Salvador.)

Coccyzus minor cozumelae van Rossem, Harvard, Mus. Comp. Zool., Bull., 77:390, 1934. (Isla Cozumel, Quintana Roo.)

RANGE. The species occurs from southern Florida, through the West Indies, Mexico, and Central America to northern South America; the race from Tamaulipas to Panama, primarily on the eastern coast, and on the islands off the coast of Central America; on the Peninsula in Yucatán (Shelley, 1891), and on the islands of Holbox, Mujeres, and Cozumel, Quintana Roo; *C. m. palloris* adjacent but distribution poorly known; appears to range from central Sinaloa, down the western coast to Panama; numerous races in the West Indies.

SPECIMENS. Quintana Roo—Isla Cozumel, 1♀, Jan. 4, 1949; Isla Mujeres, 1♀, Dec. 22, 1♂, 1♀, Dec. 25, 1950; Isla Holbox, 1♀, Dec. 20, 1950.

HABITAT. I have found the species only within the mangroves on the islands off the Peninsula, but it has been recorded from the low deciduous forest of northern Yucatán (Salvin, 1889; Shelley, 1891; Cole, 1906).

REMARKS. The race *C. m. cozumelae* has been described by van Rossem (1934) as being similar in color to the dark form *C. m. dominicae*, but differing from it in being as small as *C. m. continentalis*.

The single bird from Cozumel in this collection, which appears to be the third known specimen from that island, has been compared with a series from Isla Mujeres, Isla Holbox, the mainland of Yucatán, and from else-

where within the range of *C. m. continentalis*, as well as with series of *C. m. dominicae* and of *C. m. palloris*.

The Cozumel specimen agrees in size with *C. m. continentalis* but is considerably lighter than *C. m. dominicae*. In fact, it is very slightly lighter than the series of *C. m. continentalis*. Although I have not had the opportunity to examine the two specimens upon which the description of *C. m. cozumelae* is based, it appears that the race is untenable and should be synonymized with *C. m. continentalis*.

The species is not uncommon on Islas Holbox and Mujeres, but it is shy and difficult to collect. On Cozumel, the specimen collected was the only one which was seen, but little work was done in the mangroves and this observation probably does not reflect the true abundance of the species on the island.

WEIGHT. The male weighed 76.6 and four females 66.9, 68.4, 68.9, and 69.8 grams.

PIAYA CAYANA THERMOPHILA Sclater.
Squirrel Cuckoo. Kipcho.

Piaya thermophila Sclater, Zool. Soc. Lond., Proc., 27:368, 1859. (Jalapa, Veracruz.)

RANGE. The species ranges from Mexico to Argentina; the race from Tamaulipas southward through eastern Mexico and over almost all of Central America to Panama; on the Peninsula in Campeche (Traylor, 1941), Yucatán, and Quintana Roo, including Islas Holbox and Mujeres (Salvin, 1889); *P. c. mexicana* in the remainder of Mexico.

SPECIMENS. Quintana Roo—Chetumal, 1♂, Nov. 4, 1♂, Nov. 8, 1♂, Dec. 4, 1♀, Dec. 9, 1948; Tabi, 1♂, Mar. 31, 1♀, Apr. 1, 1953; Tulum, 1♂, Jan. 13, 1949; Xcan, 1♀, Apr. 27, 1949. Yucatán—Xocempich, 1♀, Dec. 2, 1949; Temax, 1♂, Jan. 16, 1951.

HABITAT. Distributed throughout the Peninsula, but most numerous in the zone of deciduous forest; much less common in rain forest and coastal scrub.

REMARKS. I have never seen Squirrel Cuckoos on either Isla Holbox or Isla Mujeres and presume that they are very rare, or possibly extirpated, there. It is also possible that the specimens supposedly collected by Gaumer on these islands (Salvin, 1889) were actually collected on the mainland and incorrectly labeled.

WEIGHT. Three males weighed 90.1, 98.0, and 102.1 grams; one female 99.5 grams.

CROTOPHAGA ANI Linnaeus.
Smooth-billed Ani.

Crotophaga ani Linnaeus, Syst. Nat., ed. 10, 1:105, 1758. (Jamaica.)

RANGE. Occurs from southern Florida and the Bahamas through the Greater and Lesser Antilles, on islands off the coast of Middle America,

in Panama, and in South America on the west coast south to Ecuador and east of the Andes to Argentina; one record from Isla Holbox (Shelley, 1891), and several from Isla Cozumel (Ridgway, 1885; Salvin, 1889; Shelley, 1891; Griscom, 1926b).

REMARKS. Although particular attention was paid to anis on the Peninsula and its islands, I have never seen the species.

Shelley (1891) recorded this species from Mérida. The record is based on a single bird, which is immature, and which was misidentified and actually is referable to *C. sulcirostris* (Macdonald, *in litt.*).

CROTOPHAGA SULCIROSTRIS SULCIROSTRIS Swainson.
Groove-billed Ani. Garrapatero. Chick-bul.

Crotophaga sulcirostris Swainson, Philos. Mag. (n.s.), 1:440, 1827. (Temascaltepec, Mexico.)

RANGE. The species is found from southern Texas to Peru and British Guiana; the race over the entire range with the exception of Baja California where *C. s. pallidula* occurs, although now possibly extinct; recorded from throughout the Peninsula, including the islands of Mujeres (Salvin, 1889), Holbox, and Cozumel.

SPECIMENS. Quintana Roo—Chetumal, 1♂, Nov. 17, 1♂, 1♀, Nov. 26, 1948; 7 km. W. Chetumal, 1♂, 1♀, Nov. 7, 1948; Carrillo Puerto, 1♂, June 12, 1950; Isla Cozumel, 1♂, Jan. 11, 1949; Isla Holbox, 1♀, Dec. 20, 1950. Yucatán—Mérida, 1♂, 1♀, Oct. 9, 1950; 20 km. E. Mérida, 1♀, Oct. 19, 1949; Mérida-Progreso Rd., 1♀, Sept. 7, 1950; Conkal, 1♀, Sept. 9, 1951.

HABITAT. Over the entire Peninsula; absent only in the heavy forest.

WEIGHT. Three males weighed 82.4, 84.0, and 100.9; two females, 73.2 and 77.0 grams.

TAPERA NAEVIA EXCELLENS (Sclater).
Striped Cuckoo.

Diplopterus excellens Sclater, Zool. Soc. Lond., Proc., 25:229, 1857(= 1858). (San Andrés-Tuxtla, Veracruz.)

RANGE. The species ranges from southern Mexico to Peru and northern Argentina; the race from Veracruz to Panama; on the Peninsula one record from southern Quintana Roo; *T. n. major*, alleged to occur on the Pacific slope from Chiapas to Nicaragua, requires confirmation.

SPECIMEN. Quintana Roo—Chetumal, 1♀, Feb. 25, 1949.

HABITAT. Known only from dense second growth in an abandoned milpa.

REMARKS. The species is rare north of South America. The specimen collected is the only one I have observed on the Peninsula.

The form *T. n. major* has been described by Brodkorb (1940) as being larger than *T. n. excellens*. I have no series available and am therefore unable to comment on the validity of this race, but the following is evident from the specimen from Quintana Roo.

The tail of this female measures 162.0 and its wing 124.0 millimeters. Brodkorb (1940) presented the following measurements for males of *T. n. excellens* and *T. n. major* respectively; tail 158.0—176.5, against 179.0—184.5 millimeters; wing 109.5—119.0 against 122.0—127.5 millimeters. From Ridgway (1916) it is evident that the females of *T. n. excellens* average substantially smaller than the males. Therefore, the wing measurement of the single female from Quintana Roo falls well within the minimum for the same character in males of *T. n. major*, as given by Brodkorb (1940); presumably a male from Quintana Roo would be equally large, or even larger.

BREEDING. The specimen had a slightly enlarged ovary.

WEIGHT. It weighed 24.0 grams.

DROMOCOCCYX PHASIANELLUS RUFIGULARIS (Lawrence).
Pheasant Cuckoo. Baken-chulu.

Dromococcyx rufigularis Lawrence, Acad. Nat. Sci. Phila., Proc., 15:233, 1867 (—1868?). (Guatemala.)

RANGE. The species ranges from southern Mexico to Paraguay; the race from Veracruz to Colombia; recorded from Yucatán, Campeche, and Quintana Roo (Griscom, 1926a).

SPECIMENS. Yucatán—Xocempich, 1♂, Apr. 19, 1♂, 1♀, May 16, 1953. Campeche—Ichek, 1♂, May 23, 1952.

HABITAT. From the localities at which specimens have been taken, it may be inferred that the species occurs on the Peninsula from the low deciduous forest of the north to the moderately heavy rain forest of the south.

REMARKS. These birds, which were collected by Legters, nearly double the known specimens from the Peninsula of one of the rarest, but generally distributed, species in Mexico and Central America.

BREEDING. The pair of birds collected on May 16 was breeding; the female contained nearly fully developed eggs.

GEOCOCCYX VELOX AFFINIS Hartlaub.
Lesser Road-runner. Correcamino. Xt'unt'un-kinil.

Geococcyx affinis Hartlaub, Rev. Zool., 7:215, 1844. (Guatemala.)

RANGE. The species is distributed from Mexico to northern Nicaragua; the race from eastern Chiapas and the State of Yucatán to El Salvador;

G. v. melanchima from southern Sonora southward through western and central Mexico to the Pacific Coast of Chiapas; the nominate form appears to be confined to an area from Mount Orizaba, Veracruz, south to Mount Zempoaltepec, Oaxaca.

SPECIMENS. Yucatán—Dzidzantún, 1♀, June 28, 1♀, July 2, 1952; Santa Clara, 1♀, Dec. 13, 1952; Mérida-Progreso Rd., 1♂, Sept. 7, 1♂, Sept. 8, 1950; Uxmal, 1♀, Sept. 19, 1949.

HABITAT. Occurs chiefly in the low scrub of northern Yucatán, but ranges, in second growth, into the zone of moderately high deciduous forest in the southern portion of the state.

REMARKS. The series at hand is extremely variable in coloration but cannot be distinguished from a series of *G. v. affinis* from eastern Chiapas. This finding concurs with that of Friedmann, Griscom, and Moore (1950) who considered *G. v. pallidus*, described by Carriker and de Schauensee (1935) from eastern Guatemala and Yucatán, a synonym of *G. v. affinis*.

It is notable that the population in Yucatán is totally isolated from other populations of the species by a barrier of rain forest but, in spite of this discontinuity, no riation appears to have taken place. On the other hand, many species which are resident in Mexico and Central America, and which even occur contiguously on the Peninsula, are so plastic that they have responded to the aridity of the area and are morphologically distinct.

Family TYTONIDAE

TYTO ALBA PRATINCOLA (Bonaparte). Barn Owl.

Strix pratincola (Bonaparte), Geogr. and Comp. List Bds. Europe and No. Am., p. 7, 1838. (Pennsylvania.)

RANGE. The species is nearly cosmopolitan; the race occurs over much of the United States and Mexico south to eastern Guatemala, and possibly to eastern Nicaragua; on the Peninsula known only from Yucatán; *T. a. guatemalae* to the south.

SPECIMEN. Yucatán—Xocempich, 1♂, Nov. 3, 1952.

HABITAT. Apparently occurs only in the more arid region of Yucatán; particularly numerous in Mérida.

REMARKS. The only locality on the Peninsula where Barn Owls can be found with certainty is in Mérida. During almost any evening, at all seasons, they can be seen flying to and from the spires of the cathedral in the center of the city.

BREEDING. Traylor (1941) collected a gravid female in a *cenote* at Chichén Itzá on October 15.

Family STRIGIDAE

OTUS GUATEMALAE THOMPSONI Cole.
Vermiculated Screech Owl. Kulte'.

Otus choliba thompsoni Cole, Harvard, Mus. Comp. Zool., Bull., 50:123, 1906.
(Chichén Itzá, Yucatán.)

RANGE. The species occurs from Sonora to Ecuador and southern Venezuela; the race endemic to the Yucatán Peninsula; recorded from Campeche (Traylor, 1941), Yucatán, and Quintana Roo; nominate race contiguous, ranging from southeastern Veracruz to Honduras.

SPECIMENS. Quintana Roo—Tabi, 1♂, Mar. 26, 1♀, Mar. 27, 1♀, Mar. 28, 1953. Yucatán—Xocempich, 1♀, May 16, 1♀, May 21, 1951, 1♀, June 28, 1♀, Oct. 3, 1♀, Oct. 6, 1♀, Nov. 20, 1952.

HABITAT. Appears to be most common in deciduous forest; one record from rain forest zone in southern Campeche (Traylor, 1941).

REMARKS. This splendid series, obtained by Legters, triples the known specimens of the race. Four are in the rufous phase; the remaining five are in the "gray" phase, but with considerable variation. The dorsal ground color of one gray-phase specimen is notably pallid, with the dark markings somewhat reduced; three are more brownish with "normal" dark markings; the fourth is grayish brown with heavy and nearly black markings.

Traylor (1941) found that the specimen from southern Campeche exhibited a slight approach to the nominate form.

BREEDING. The bird taken on June 28 was incubating three eggs.

BUBO VIRGINIANUS MAYENSIS Nelson.
Great Horned Owl. Buho. Tunkuruchu.

Bubo virginianus mayensis Nelson, Biol. Soc. Wash., Proc., 14:170, 1901. (Chichén Itzá, Yucatán.)

RANGE. The species is found over most of the Western Hemisphere; the race from Tamaulipas and Jalisco southward to Panama; recorded from Yucatán and Quintana Roo; numerous races to the north and in South America.

SPECIMENS. Quintana Roo—San Juan, 1♀, Apr. 2, 1949. Yucatán—Santa Clara, 1♂, Oct. 26, 1951.

HABITAT. Known only from deciduous forest and coastal scrub in Yucatán and Quintana Roo.

REMARKS. A rare species on the Peninsula.

BREEDING. The bird from San Juan is a nestling which was capable of

flying only a short distance. The nest, which was situated in a large, exposed tree at the edge of a *cocal*, contained two young.

GLAUCIDIUM BRASILIANUM RIDGWAYI Sharpe.
Ferruginous Pygmy-Owl. Vieja. Toj-caj-xnuk.

Glaucidium ridgwayi Sharpe, Ibis, 17:55, 1875. (Mexico.)

RANGE. The species occurs from the southern United States to extreme southern South America; the race from San Luis Potosí and Guerrero southward to Panama; throughout the Peninsula including Isla Cozumel (Salvin, 1889); *G. b. cactorum* for the remainder of the range northward; *G. b. saturatum* of Pacific coast of Chiapas and northern Guatemala not certainly distinct from *G. b. ridgwayi*.

SPECIMENS. Quintana Roo—Bacalar, 1♂, Feb. 17, 1952; 5 km. NW. Vigía Chico, 1♂, Apr. 7, 2♂, Apr. 8, 1949. Yucatán—Sucopó, 1♂, Apr. 21, 1949; Xocempich, 1♀, Dec. 8, 1952; Yobaín, 1♂, Jan. 18, 1950; Mérida, 1♂, Oct. 6, 1950; Santa Clara, 1♂, June 14, 1949. Campeche—Champotón, 1♂, Jan. 23, 1♀, Jan. 25, 1♂, Jan. 27, 1951.

HABITAT. Primarily a bird of the deciduous forest and coastal scrub, but also occurs in second growth within rain forest.

REMARKS. Within suitable habitats in the northern portion of the Peninsula, this species is ubiquitous; farther south it is much more local.

BREEDING. The breeding season appears to be extended but full data are not yet available. One of three birds taken by me in late January was reproductively active, as were all of those taken in April. The condition of the gonads of the remaining birds was not noted by the collectors.

WEIGHT. Six males weighed 53.0, 56.4, 56.5, 58.0, 58.3, and 63.5 grams; one female 71.4 grams.

SPEOTYTO CUNICULARIA HYPUGAEA (Bonaparte).
Burrowing Owl.

Strix hypugaea Bonaparte, Am. Ornith., 1:72, 1825. (Plains of the Platte River, western United States.)

RANGE. The species is distributed from western North America, southern Florida and the West Indies to southern South America; the race breeds from the southern portion of western Canada to Honduras; northern birds migratory; records from Costa Rica and Panama probably refer to migrants; in Yucatán known from one specimen (Cole, 1906).

HABITAT. Known only from the *henequén* region of northern Yucatán.

REMARKS. The fact that there has been only one record of this species in Yucatán, in spite of intensive collecting, strongly suggests that it may be an irregular or rare visitant. The report of Siebenaler (1954) of a small

owl which flew on board a ship anchored near Cayos Arcas lends support to this suggestion. Although the owl was not identified, it was reported to be about nine inches high, which is roughly the size of a Burrowing Owl. While there are other northern owls of approximately this size which may conceivably migrate across the Gulf, there is no record of any on the Peninsula. Therefore, although the evidence is weak, it at least seems possible that the owl observed at sea was a Burrowing Owl and that the one collected by Cole (1906) in February was merely a winter visitant.

CICCABA VIRGATA CENTRALIS Griscom.
Mottled Wood-Owl. Buho.

Ciccaba virgata centralis Griscom, Harvard, Mus. Comp. Zool., Bull., 69:159, 1929. (Chivela, Oaxaca.)

RANGE. The species occurs from Mexico to northern Argentina; the race from San Luis Potosí through eastern and southern Mexico to Panama; on the Peninsula in Yucatán (Boucard, 1883), Campeche (Ridgway, 1914), and Quintana Roo; *C. v. tamaulipensis*, of Tamaulipas and Nuevo León, and *C. v. squamulata*, of central and western Mexico, contiguous.

SPECIMENS. Quintana Roo—Chetumal, 1♂, Oct. 29, 1♀, Nov. 19, 1948, 1♂, 1♀, winter, 1949; Ucum, 1♀, Feb. 22, 1952; Laguna Chacanbacab, 1♂, May 14, 1949.

HABITAT. Appears to be confined to higher deciduous forest and heavy second growth within the rain forest zone.

REMARKS. This species is particularly abundant in southern Quintana Roo, where it is frequently found within the town of Chetumal and in the second growth bordering the road which extends westward from that town.

I am unable to recognize the characters ascribed to *C. v. eatoni* by Kelso and Kelso (1936), and agree with Peters (1940) and with Friedmann, Griscom, and Moore (1950) that *C. v. eatoni* is merely a light phase of *C. v. centralis*.

BREEDING. The specimen taken in February contained an egg and the male taken in May exhibited slightly enlarged gonads.

WEIGHT. A nonbreeding female weighed 187.0 grams. Van Tyne (1935) found a male from Petén to weigh 236 grams.

CICCABA NIGROLINEATA Sclater.
Black and White Owl.

Ciccaba nigrolineata Sclater, Zool. Soc. Lond., Proc., 27:131, 1859. (Oaxaca.)

RANGE. A monotypic species ranging from Veracruz and Oaxaca to Colombia and western Ecuador; one specimen from southern Quintana Roo.

SPECIMEN. Quintana Roo—Laguna Chacanbacab, 1♂, May 16, 1949.

HABITAT. Known only from heavy rain forest.

REMARKS. The unusual mammal-like cry of this widely distributed, but rare, species led to its collection. I have never seen or heard it again.

Family NYCTIBIIDAE

NYCTIBIUS GRISEUS MEXICANUS Nelson.

Common Potoo. Lechusa. Hap. Hap-mu-hap.

Nyctibius jamaicensis mexicanus Nelson, Auk, 17:260, 1900. (Metlaltoyuca, Puebla.)

RANGE. The species occurs from Mexico to Argentina, and in Jamaica and Hispaniola; the race from Sinaloa and Tamaulipas southward over southern Mexico, including the entire Yucatán Peninsula, to Guatemala and Honduras.

SPECIMENS. Quintana Roo—Chetumal, 1♀, Nov. 22, 1948; Km. 21, Chetumal—Bacalar Rd., 1♂, Mar. 28, 1952; Km. 25, Chetumal—Bacalar Rd., 1♀, Mar. 15, 1♀, Mar. 16, 1952. Yucatán—Xocempich, 1♀, July 24, 1952; 12 km. NW. Mérida, 1♀, Jan. 5, 1951. Campeche—Champotón, 1♀, Jan. 23, 1♂, 1♀, Jan. 24, 1951.

HABITAT. Found in open fields or on the margins of light forests, chiefly in the southern portion of the Peninsula.

REMARKS. The species had not been recorded from the area before Traylor (1941) collected a single bird at Pacaytun.

In the vicinity of Champotón and Chetumal, one can be almost certain of seeing at least one potoo any evening during an hour or so in the field in a favorable habitat. Farther north on the Peninsula, however, it appears to be extremely rare.

BREEDING. None of the specimens collected showed any indications of breeding. Presumably nesting takes place during the same period as in Petén, where Van Tyne (1935) recorded a flightless juvenal in early May.

WEIGHT. One male and two females, all with heavy layers of fat, weighed 210.2, 246.4, and 251.0 grams, respectively.

Family CAPRIMULGIDAE

CHORDEILES ACUTIPENNIS TEXENSIS Lawrence.

Lesser Nighthawk. Tapacamino. Pujuy.

Chordeiles texensis Lawrence, Lyc. Nat. Hist. N. Y., Ann., 6:167, 1856. (Rio Grande City, Texas.)

RANGE. The species is distributed from the southwestern United States to southern Brazil and western Peru; the race breeds from central California east to southern Texas and south to Michoacán and Veracruz; winters

from Mexico to Colombia; one definite record from Yucatán (Cory, 1918); *C. a. micromeris*, and *C. a. littoralis* considered below.

REMARKS. The only specimen from the Peninsula which has been definitely identified as belonging to this race is a single bird in the collections of the Chicago Natural History Museum (Cory, 1918).

Oberholser (1914), in his review of the genus, included Isla Cozumel within the winter range of *C. a. texensis*, but did not list any specimen from the island as having been examined by him. Apparently he based this record on specimens collected by Gaumer (Salvin, 1889) on Cozumel. Since these specimens were collected before *C. a. micromeris* was described, they cannot be placed subspecifically without re-examination.

C. a. texensis is to be expected as a winter visitant, or possibly only as a transient, but the fact that it has not been taken during recent intensive collecting is undoubtedly an indication that it is rare.

CHORDEILES ACUTIPENNIS MICROMERIS Oberholser.

Chordeiles acutipennis micromeris Oberholser, U. S. Nat'l Mus., Bull., 86:100, 1914. (Xbac, Yucatán.)

RANGE. The race breeds from Jalisco, Guerrero, and Tabasco south to Nicaragua, and on the Yucatán Peninsula in Campeche (Oberholser, 1914), on Isla Mujeres (Oberholser, 1914), and probably on Isla Cozumel (Salvin, 1889), Quintana Roo, and in Yucatán; winters from Costa Rica south to Colombia; *C. a. littoralis* known from Pacific Coast of Chiapas; complete range uncertain and winter range unknown.

SPECIMENS. Yucatán—Santa Clara, 1♂, 1♀, Aug. 23, 2♂, Aug. 26, 1950, 1♂, May 14, 1♂, 1♀, June 27, 1♂, Aug. 8, 1952; Dzidzantún, 3♂, June 28, 1♀, Sept. 19, 1952; Progreso, 1♂, Sept. 8, 1950; 10 km. N. Mérida, 1♀, Sept. 6, 1950.

HABITAT. Coastal scrub of northern Yucatán and on relatively arid islands; habitat of the species in Campeche, where known from one specimen (Oberholser, 1914), unknown but probably coastal.

REMARKS. The many specimens collected on Isla Cozumel (Salvin, 1889, Hartert, 1892) need to be re-examined, but there is little doubt that they will be found to be referable to *C. a. micromeris*, which undoubtedly breeds there.

The species was not found on Isla Mujeres when I visited the island in December. Presumably it is absent during the winter.

BREEDING. A nest with two fresh eggs was found at Santa Clara on June 14.

CHORDEILES MINOR MINOR (Forster).
Common Nighthawk.

Caprimulgus minor Forster, Cat. Anim. No. Am., p. 13, 1771. (South Carolina.)

RANGE. The species breeds from the tree line in Canada over the entire United States to northern Mexico and the West Indies; the race over much of Canada and northeastern United States; winters in South America; on the Peninsula recorded once, in the fall, from Campeche (Oberholser, 1914); numerous additional races, some of which are discussed below.

REMARKS. The species is highly migratory and is rarely collected between its breeding and wintering areas.

The only Peninsular records for the species were summarized 40 years ago by Oberholser (1914). Since that time not a single additional record has been published.

CHORDEILES MINOR CHAPMANI Coues.

Chordeiles (sic) popetus chapmani Coues, Auk, 5:37, 1888. (Gainesville, Florida.)

RANGE. The race breeds in the southeastern United States and winters in Brazil and Argentina; recorded in the fall from Campeche and in the spring from Yucatán (Oberholser, 1914).

CHORDEILES MINOR ASERRIENSIS Cherrie.

Chordeiles virginianus aserriensis Cherrie, Auk, 13:136, 1896. (Río Aserri, San José, Costa Rica.)

RANGE. The race breeds in southern Texas and northern Tamaulipas; winter range unknown; one spring and two fall records from Campeche (Oberholser, 1914).

CHORDEILES MINOR HOWELLI Oberholser.

Chordeiles virginianus howelli Oberholser, U. S. Nat'l Mus., Bull., 86:57, 1914. (Lipscomb, Texas.)

RANGE. The race breeds from Wyoming south to northern Texas in the western Great Plains region and in the eastern areas of the Rocky Mountain states; winter range unknown; one spring record from Campeche (Oberholser, 1914).

CHORDEILES MINOR HENRYI Cassin.

Chordeiles henryi Cassin, Illus. Birds California and Texas, etc., 1:239, 1855. (Fort Webster, New Mexico.)

RANGE. The race breeds from southwestern Colorado through Arizona and New Mexico to western Texas and south to Durango; winter range unknown; one spring and one fall record from Campeche (Oberholser, 1914).

CHORDEILES MINOR HESPERIS Grinnell.

Chordeiles virginianus hesperis Grinnell, Condor, 7:170, 1905. (San Bernardino Mts., Calif.)

RANGE. The race breeds from southeastern British Columbia and southwestern Saskatchewan south to southern California; winter range unknown; one fall record from Campeche (Oberholser, 1914).

NYCTIDROMUS ALBICOLLIS YUCATANENSIS Nelson.

Parauque. Tapacamino. Pujuy.

Nyctidromus albicollis yucatanensis Nelson, Biol. Soc. Wash., Proc., 14:171, 1901. (Tunkás, Yucatán.)

RANGE. The species occurs from southern Texas to Paraguay; the race from Sinaloa and southern Tamaulipas to British Honduras and central Guatemala; throughout the Peninsula and on the islands of Mujeres (Salvin, 1889), Cozumel, and Holbox; *N. a. merrilli* contiguous in northern Tamaulipas and southern Texas, and *N. a. albicollis* from Guatemala southward to Peru and Amazonia.

SPECIMENS. Quintana Roo—25 km. W. Chetumal, 1 ♀, Aug. 16, 1950; 46 km. W. Chetumal, 1 ♀, Feb. 11, 1 ♀, Feb. 15, 1 ♀, Feb. 17, 1949; Bacalar, 2 ♀, Feb. 10, 1952; 24 km. NW. Xtocomo, 1 ♂, Feb. 24, 1951; Carrillo Puerto, 1 ♀, Mar. 5, 1949; 5 km. NW. Vigía Chico, 1 ♂, 1 ♀, Apr. 8, 1949; Tabi, 1 ♀, Mar. 10, 1 ♂, Mar. 16, 1949, 1 ♂, Mar. 24, 1 ♂, Mar. 26, 1953; Isla Cozumel, 1 ♂, June 4, 1952; Ch'ich', 1 ♂, May 4, 1950; Kilómetro Cincuenta, 1 ♀, July 28, 1951; 15 km. NW. Kantunil-Kín, 2 ♀, Dec. 14, 1950. Yucatán—Sisal, 1 ♀, 1 ♂, Jan. 6, 1951; Santa Clara, 1 ♂, Aug. 26, 1950; Xocempich, 1 ♀, Dec. 10, 1949. Campeche—Champotón, 1 ♂, 1 ♀, Jan. 24, 1 ♀, Jan. 26, 1 ♂, Jan. 27, 1951.

HABITAT. Occurs throughout the Peninsula; absent only in the interior of heavy rain forest.

REMARKS. With the exception of a male from Sisal and a female from near Kantunil-Kín, the entire series may be referred to *N. a. yucatanensis* without question. The wing and tail of the male measure 175.0 and 171.5

millimeters, and of the female 172.0 and 158.0 millimeters respectively. Both birds are large and might be considered to be wintering *N. a. merrilli*. However, although the coloration of both specimens is quite light, they can be matched with breeding birds from the Peninsula. In fact, they are slightly darker than several specimens.

This species is the most abundant caprimulgid on the Peninsula. There is hardly a suitable habitat where it is not found in great numbers. Although it has been recorded from Isla Mujeres in December (Hartert, 1892), it was not found during my visit in the same month. Because the *Pujuy* is well known to the inhabitants of the island, it is presumed that it is sometimes absent during the winter. On Isla Holbox, also in December, the species was not seen although the people insisted it should be present. A clump of feathers, with the characteristic markings on the tail of the male, was found, indicating that the species must be present during at least part of the year.

BREEDING. The first indications of reproductive activity were seen in late February; my latest record is April 8. Without doubt, when more data are available, nesting will be found to extend at least to May, since the species has been found breeding in Petén (Van Tyne, 1935) during that month.

WEIGHT. Six males had a mean weight of 64.75 ± 3.09 , and 10 females a mean of 61.68 ± 4.22 grams.

OTOPHANES YUCATANICUS (Hartert).
Yucatán Poor-will. Chak Pujuy. Xt'unkeyay.

Caprimulgus yucatanicus Hartert, Cat. Birds Brit. Mus., 16:575, 1892. (Tizimín, Yucatán.)

RANGE. A monotypic species endemic to the Yucatán Peninsula and adjacent Petén; *O. mcleodii*, the only related species, known from Chihuahua, Jalisco, and Guerrero.

SPECIMENS. Quintana Roo—Km. 21, Chetumal-Bacalar Rd., 1♂, June 5, 1952; Bacalar, 1♀, Feb. 15, 1♀, Feb. 17, 1952; Carrillo Puerto, 1♂, July 5, 1950; Tabi, 1♂, Mar. 10, 1949, 1♂, Mar. 25, 1♀, Mar. 26, 1♂, Mar. 27, 1♂, Apr. 4, 1953. Yucatán—Xocempich, 1♀, July 5, 1♂, Oct. 2, 1♀, Nov. 12, 1♀, Dec. 16, 1952, 1♂, Jan. 22, 1♀, Jan. 23, 1♂, Feb. 2, 1♂, Feb. 13, 1♀, May 16, 1♂, May 23, 1953. Campeche—Ichek, 1♂, Sept. 25, 1950.

HABITAT. Appears to be most abundant in deciduous forest; occurs less commonly in scrubby second growth within the zone of rain forest.

REMARKS. This large series, which quadruples the known specimens of one of the rarest of Middle American birds, was collected mainly through the efforts of Legters.

Legters, who has become much more familiar with the species than I, has discovered that it is arboreal, often occurring high in large trees. This

habit explains why the species was collected so seldom previously, although, judging by the frequency with which it is heard, it is fairly abundant.

The call is notably distinct from that of any other caprimulgid with which I am familiar. I recorded it as sounding somewhat like "Ree-o-Ree," rising in intensity on the terminal vowel in the first and last syllables, and dropping abruptly on the middle syllable. It is produced rapidly and several times in succession.

As was noted by Ridgway (1914) the white tips of the outer rectrices are slightly more narrow in the female than in the male, but there is considerable over-lap and this is merely a generalization.

The general coloration is also highly variable. Two females are pale rufescent and distinctly different from the remaining birds of both sexes, but one male approaches this coloration and it is doubtful that rufescence is a "phase" restricted to females, as suggested by Ridgway (1914). The remaining specimens in the series vary from light gray through brown to nearly black. Individual specimens standing alone might be considered to represent distinct color phases, but when in a series it is obvious that there is too much intergradation, and even variation between parts of a given specimen, to warrant "phase" designation.

The width and number of black streaks on the pileum is inconsistent. No sexual dimorphism in this character is apparent, although Ridgway (1914) thought the streaks are more narrow in the female.

The wings of 11 males and of seven females have a mean length of 112.55 ± 2.57 and 110.78 ± 0.91 millimeters respectively; the tails of nine males and of six females are 104.5 ± 3.87 and 101.91 ± 3.61 millimeters respectively. The difference between the means for each character is statistically insignificant.

BREEDING. Specimens have been found breeding between March 10 and May 23.

WEIGHT. A male weighed 21.3 grams.

CAPRIMULGUS CAROLINENSIS Gmelin.
Chuck-will's-widow.

Caprimulgus carolinensis Gmelin, Syst. Nat., 1:1028, 1789. (South Carolina.)

RANGE. A monotypic species breeding from southern Maryland and Kansas south to central Texas and the Gulf States; winters from Florida and the Greater Antilles through Central America to Colombia; recorded in the spring from Quintana Roo and in the fall from Yucatán.

SPECIMENS. Quintana Roo—Cayo Culebra, 1♀, Apr. 15, 1949. Yucatán—Xocmich, 1♀, Sept. 23, 1952.

REMARKS. This species appears to be merely a transient on the Peninsula and is known there only from these specimens.

CAPRIMULGUS SALVINI BADIUS (Bangs and Peck).
Tawny-collared Nightjar.

Antrostomus badius Bangs and Peck, Biol. Soc. Wash., Proc., 21:44, 1908.
(Toledo District, British Honduras.)

RANGE. The species is known from eastern Mexico, British Honduras, and possibly Nicaragua; the race from Yucatán, Quintana Roo, including Isla Cozumel, and British Honduras; the nominate race from Nuevo León, Tamaulipas, San Luis Potosí, and Veracruz.

SPECIMENS. Quintana Roo—Tabi, 1♂, Mar. 15, 1949; Ch'ich', 1♀, May 13, 1950; Isla Cozumel, 1♀, Feb. 3, 1951, 1♀, June 5, 1952. Yucatán—Holca, 1♀, Oct. 26, 1950; Xocempich, 1♂, Mar. 18, 1953; Uxmal, 1♀, Jan. 17, 1951.

HABITAT. Apparently confined to the zone of deciduous forest.

REMARKS. This extremely rare race was previously known from four specimens.

The two specimens which I collected were taken by chance and at first were thought to be the ubiquitous *Nyctidromus albicollis*. Neither bird was heard to call, which undoubtedly would have provided a means of differentiating the two species, although I know of no description of the vocalization of *Caprimulgus salvini*. The bird from Tabi was taken on the ground early in the morning while the Uxmal bird was seen on a road at night and flew into a tree about five meters from the ground, a behavior contrary to that of the Parauque. It is not unlikely that *Caprimulgus salvini* will be found to be a partly arboreal species, similar to *Otophanes yucatanicus*.

BREEDING. Legters located the June female from Cozumel on a nest and collected its two eggs. One egg is ovate, measuring 30.0 x 21.5 millimeters, and lightly marked with irregular blotches of rich chocolate brown. The other egg has exactly the same measurements, but is elliptical ovate and marked only at one end.

The two males collected in mid-March had very enlarged testes.

WEIGHT. A male weighed 65.5 and a female 51.2 grams.

Family APODIDAE

CHAETURA PELAGICA (Linnaeus).
Chimney Swift.

Hirundo pelagica Linnaeus, Syst. Nat., ed. 10, 1:192, 1758. (South Carolina.)

RANGE. A monotypic species which breeds east of the Rocky Mountains from southern Canada to the Gulf; winters in Peru; spring transient on Isla Cozumel, Quintana Roo (Salvin, 1889).

REMARKS. Apparently the only records from the Peninsula are four

specimens collected by Gaumer in April on Isla Cozumel (Salvin, 1889).

Griscom's allegation (1926b) that Chimney Swifts were present on Isla Cozumel in February is certainly an error and undoubtedly refers to *Chaetura vauxi*.

CHAETURA VAUXI GAUMERI Lawrence.
Vaux Swift. K'usam. K'usamch'en.

Chaetura gaumeri Lawrence, N. Y. Acad. Sci., Ann., 2:245, 1882. (Yucatán.)

RANGE. The species breeds from Alaska to Panama; the race endemic to the Yucatán Peninsula, where recorded from Campeche (sight records), Yucatán, and Quintana Roo, including Isla Cozumel (Salvin, 1889); *C. v. richmondi* from Veracruz and Oaxaca south to Panama; *C. v. tamaulipensis* in Tamaulipas and San Luis Potosí, and possibly adjacent states.

SPECIMENS. Quintana Roo—Carrillo Puerto, 1♂, 1♀, June 26, 1950; Ch'ich', 1♂, May 9, 1♀, May 11; 15 km. NW. Kantunil-Kin, 1♂, Jan. 1, 1951. Yucatán—Uxmal, 1♂, Jan. 19, 1951; Xocempich, 1♂, June 23, 1952.

HABITAT. Throughout the Peninsula.

REMARKS. This species has been seen at nearly every locality where I have worked, but owing to its habit of flying very high it is difficult to collect.

All of these specimens are typical *C. v. gaumeri*, although specimens from the base of the Peninsula may be expected to intergrade with *C. v. richmondi*, as suggested by Sutton (1941).

WEIGHT. A male weighed 15.8 grams.

Family TROCHILIDAE

PHAETHORNIS LONGUEMAREUS ADOLPHI Gould.
Little Hermit.

Phaethornis adolphi Gould, Monogr. Trochil., 1, pl. 35, 1857. (Córdoba, Veracruz.)

RANGE. The species is distributed from southern Mexico to Peru and Brazil; the race from Veracruz southward through Oaxaca and Tabasco to northern Chiapas, southwestern Campeche (Traylor, 1941), and Quintana Roo (sight record); *P. l. saturatus* from Guatemala to Panama.

HABITAT. Rain forest.

REMARKS. Traylor (1941) collected two specimens in February at Pacaytun, where it was not uncommon. I saw a single bird near Xtocomo, Quintana Roo, in late February 1951. These are the only records for the Peninsula, although Friedmann, Griscom, and Moore (1950) included Yucatán

within the distribution, but presented no data to substantiate this extension of range. The species is a humid forest form and its presence in Yucatán would be unexpected.

CAMPYLOPTERUS CURVIPENNIS PAMPA (Lesson).

Wedge-tailed Sabre-wing. Tsunuum.

Ornismya pampa Lesson, Hist. Nat. Colibris, Suppl. Ois.-Mouch., p. 127, 1832. (Guatemala.)

RANGE. The species ranges from Tamaulipas southward through eastern Mexico to eastern Guatemala; the race endemic to the Yucatán Peninsula, and the adjacent lowlands of Guatemala; the nominate form for the remainder of the range, with the exception of southern Veracruz, where *C. c. excellens* occurs, which may be a sibling species (*vide*, Lowery and Dalquest, 1951).

SPECIMENS. Quintana Roo—Chetumal, 1♀, Dec. 6, 1948; Bacalar, 1♂, Feb. 18, 1♂, Oct. 27, 1952; 24 km. NW. Xtocomo, 1♂, Dec. 30, 1950; Carrillo Puerto, 1♀, June 10, 1950; Tabi, 1♀, Mar. 12, 1949; Laguna Chichancanab, 1♂, Mar. 11, 1951; 15 km. NW. Kantunil-Kín, 1♂, Dec. 30, 1950, 1♂, Jan. 1, 1951. Yucatán—Chemax, 1♀, Mar. 20, 1950; Xocempich, 1♂, May 11, 1951. Campeche—20 km. N. Escárcega, 1♀, Mar. 4, 1951; 2 km. N. Aguada Seca, 1♀, Feb. 5, 1951.

HABITAT. Chiefly rain forest, but local in relatively high deciduous forest.

REMARKS. Sabre-wings are among the less common hummingbirds on the Peninsula but are by no means rare. When an isolated vine or tree is flowering in the rain forest, it is often possible to see several Sabre-wings at one time.

The specimens from southern Campeche exhibit no approach to *C. c. curvipennis*, although Ridgway (1911) considered a single specimen from Apazote, which is in central Campeche, to be this form. Traylor (1941) also noted no approach to the nominate race in his specimens from southwestern Campeche.

WEIGHT. Three males weighed 6.5, 6.7, and 6.9 grams; four females 4.3, 4.4, 4.8, and 4.9 grams.

ANTHRACOTHORAX PREVOSTII PREVOSTII (Lesson).

Green-breasted Mango.

Trochilus prevostii Lesson, Hist. Nat. Colibris, Suppl. Ois.-Mouch., p. 87, 1832. ("South America.")

RANGE. The species ranges from Mexico to Venezuela and on Old Providence and St. Andrew's islands; the race from Tamaulipas through eastern Mexico to Guatemala and British Honduras; recorded from throughout the

Peninsula and on Isla Holbox (Salvin, 1889), Isla Mujeres (Salvin, 1889), Cayo Norte, Banco Chinchorro (Griscom, 1926b), and Isla Cozumel.

SPECIMENS. Quintana Roo—Chetumal, 1♂, July 11, 1949; Tabi, 2♂, Mar. 14, 1949, 2♂, 1♀, Mar. 25, 1953; Carrillo Puerto, 1♀, Apr. 11, 1949, 1♀, June 14, 1♀, June 15, 1♀, June 16, 1♀, June 19, 1950; Isla Cozumel, 2♂, Feb. 5, 1951. Yucatán—Dzidzantún, 1♂, Jan. 26, 1952. Campeche—Champotón, 1♂, Jan. 23, 1951; 2 km. N. Aguada Seca, 1♂, Feb. 6, 1951.

HABITAT. Primarily distributed in deciduous forest, occurring less frequently in rain forest, and rarely in insular scrub.

REMARKS. Although Friedmann, Griscom, and Moore (1950) imply that the species merely winters in the northern portion of the Peninsula, it is found throughout the year with no apparent diminution in numbers at any season.

In common with *Campylopterus curvipennis*, this is one of the less abundant hummingbirds but, in contrast, it is a bird of more arid areas.

BREEDING. Specimens with enlarged gonads were taken in mid-March. Chapman (1896) also reported a breeding specimen in the same month.

WEIGHT. Four males weighed 6.0, 6.1, 6.7, and 7.5; one female 7.0 grams.

CHLOROSTILBON CANIVETII CANIVETII (Lesson).

Fork-tailed Emerald. Tsunuum.

Ornismya canivetii Lesson, Hist. Nat. Colibris, Suppl. Ois-Mouches, p. 174, 1832. (Jalapa, Veracruz.)

RANGE. The species occurs from Mexico to Colombia and Venezuela and on islands of southeastern Mexico, Honduras, Panama, and Venezuela; the race from Tamaulipas through eastern and southern Mexico, including the entire Yucatán Peninsula and Isla Holbox, to northern Guatemala, British Honduras, and the Bay Islands of Honduras; *C. c. auriceps* from Sinaloa through western and central Mexico to Guerrero and Mexico; *C. c. forficatus* confined to Isla Cozumel and Isla Mujeres, Quintana Roo.

SPECIMENS. Quintana Roo—Chetumal, 1♂, Nov. 3, 1♂, Dec. 16, 1948, 1♂, May 7, 1♀, May 5, 1949; Carrillo Puerto, 1♀, 1 yg., Apr. 29, 1♂, June 9, 1♂, June 20, 1♂, June 21, 1950; Tabi, 1♂, Mar. 24, 1♀, Mar. 25, 1♀, Mar. 28, 1953; 15 km. NW. Kantunil-Kin, 1♂, Dec. 3, 1950; Isla Holbox, 1♀, Dec. 19, 1♂, 1♀, Dec. 20, 1950. Yucatán—Santa Clara, 1♂, Aug. 29, 1950; Mérida-Progreso Rd., 1♂, Sept. 7, 1950; Mérida, 1♂, Oct. 20, 1950; Xocempich, 1♂, Oct. 20, 1950, 1♂, June 12, 1♂, Oct. 2, 1950. Campeche—Ichek, 1♀, July 20, 1♂, Sept. 25, 2♂, Sept. 26, 1950; Champotón, 1♀, Jan. 24, 1♂, Jan. 28, 1951; 2 km. N. Aguada Seca, 1♂, Feb. 8, 1951.

HABITAT. Most abundant in the coastal scrub and low deciduous forest, but extends into the zone of rain forest where there is dry second growth.

REMARKS. The population on Isla Holbox was referred to *C. c. forficatus* by Ridgway (1911), although specimens from that locality could not be differentiated from the mainland form by Salvin (1889, 1892). My specimens are identical with those from the Peninsula.

BREEDING. Breeding appears to begin in February and extends at least to May. A nestling just ready to fly was collected on April 29.

WEIGHT. Seven males weighed 2.1, 2.4, 2.4, 2.5, 2.5, 2.6, and 2.8 grams; three females 2.1, 2.2, and 2.6 grams.

CHLOROSTILBON CANIVETHI FORFICATUS Ridgway.

Chlorostilbon forficatus Ridgway, Desc. New Spp. Bds. Cozumel Id., p. 3, 1885. (Isla Cozumel, Quintana Roo.)

RANGE. Endemic to Isla Cozumel, and probably to Isla Mujeres (Salvin, 1892).

SPECIMENS. Quintana Roo—Isla Cozumel, 1♂, Jan. 3, 1♂, Jan. 4, 1♀, Jan. 7, 1949, 1♂, Feb. 2, 1951, 1♀, June 5, 1♀, June 6, 1952.

HABITAT. Scrub and low deciduous insular forest.

REMARKS. The species appears to be very rare on Isla Mujeres. During my visit to the island in late December a single one was seen, and that was within the village where it could not be collected.

The only specimen from Isla Mujeres known to me is an adult male in the British Museum. Salvin (1892) identified it as *C. c. forficatus*. Since he had an adequate series from Isla Cozumel and from the mainland with which to compare this bird, there is no reason to doubt his identification.

WEIGHT. Two males and a female weighed 2.4, 2.6, and 2.5 grams, respectively.

AMAZILIA CANDIDA CANDIDA (Bourcier and Mulsant).
White-bellied Emerald.

Trochilus candidus Bourcier and Mulsant, Ann. Sci. Phys. et Nat., d'Agric. et d'Ind., Soc. Roy. etc., Lyon, 9:326, 1846. (Coban, Guatemala.)

RANGE. The species is distributed from eastern Mexico south to Costa Rica; the race from San Luis Potosí and Veracruz through southern Mexico, including Yucatán (Traylor, 1941), Quintana Roo, and Campeche, to Costa Rica; *A. c. pacifica* on the Pacific slope of Guatemala.

SPECIMENS. Quintana Roo—Chetumal, 1♀, Nov. 4, 1948; 46 km. W. Chetumal, 1♂, Feb. 11, 1949; Bacalar, 1♂, Feb. 6, 1♂, Oct. 28, 1952; 24 km. NW. Xtocomo, 1♂, Feb. 24, 1951; Carrillo Puerto, 1♂, May 8, 1♂, June 10, 1♂, June 21, 1♂, June 27, 1950; 15 km. NW. Kantunil-Kin, 1♂, Dec. 31, 1950, 1♂, Jan. 1, 1951. Campeche—Ichek, 2♂, Sept. 25, 1♂, Sept. 26, 1♂, 1♀, Sept. 27, 1951; 2 km. N. Aguada Seca, 2♀, Feb. 6, 1951.

HABITAT. Edges of rain forest and less commonly within the zone of deciduous forest.

REMARKS. Traylor (1941) found this species one of the most common

at Chichén Itzá, Yucatán, although prior to this there had been only one record from the State (Salvin, 1892). I have never seen it there and presume that it must occur locally or sporadically within the more arid areas of the Peninsula.

WEIGHT. Two males and two females weighed 3.8 and 4.1, and 3.4 and 4.1 grams, respectively.

AMAZILIA CYANOCEPHALA GUATEMALENSIS (Gould).
Red-billed Azure-crown.

Cyanomyia guatemalensis Gould, Intro. Trochil., p. 148, 1861. (Dueñas, Guatemala.)

RANGE. The species occurs from Mexico to Nicaragua; the race from Guatemala and British Honduras to northern Nicaragua; one record from extreme southern Quintana Roo (Peters, 1913); the nominate race from southern Tamaulipas through Chiapas to northwestern Guatemala.

HABITAT. The species is most often found at high altitudes and in pine or oak forests. The pine ridges of British Honduras are only a relatively short distance from the locality where the specimen was collected and it is presumed to have wandered into the rain forest from there.

REMARKS. Examination of the single specimen collected by Peters (1913) at Camp Mengel (= Alvaro Obregón) indicates that it is referable to the more southern race, rather than to the nominate form, as cited by Friedmann, Griscom, and Moore (1950).

AMAZILIA RUTILA RUTILA (DeLattre).
Cinnamon Hummingbird. Tsunuum.

Ornismya rutila DeLattre, Écho du Monde Sav. (2), 7, col. 1069, 1843. (Acapulco, Guerrero.)

RANGE. The species is distributed from western and southern Mexico to Costa Rica; the race in western Mexico from Sinaloa to Oaxaca, on the Peninsula in Yucatán and Quintana Roo, including Isla Holbox, Isla Contoy, Isla Mujeres, and Cayo Culebra, and southward to western Costa Rica; *A. r. corallirostris* restricted to Pacific slope from Chiapas to El Salvador.

SPECIMENS. Quintana Roo—Chetumal, 1♀, Oct. 30, 1948; Cayo Culebra, 1♂, Apr. 4, 1♂, Apr. 6, 1949; Isla Mujeres, 1♀, Dec. 23, 1950; Isla Contoy, 1♂, Dec. 27, 1950; Isla Holbox, 1♂, 1♀, Dec. 17, 2♀, Dec. 19, 1950. Yucatán—Mérida, 1♀, Oct. 4, 1950; Xocempich, 1♀, Nov. 8, 1949; Santa Clara, 1♂, Aug. 28, 1♂, 1♀, Aug. 30, 1♂, Sept. 2, 1♂, Sept. 19, 1950.

HABITAT. Most abundant in scrub on the coast and islands, becoming progressively less common in higher deciduous forest.

REMARKS. At one time it appeared that the mainland population on the

Peninsula was confined to the State of Yucatán and isolated from the Central American populations by a barrier of high forest. It is now evident that the species is present along the entire coast of Quintana Roo, and thereby united with the more southern populations.

Although Cinnamon Hummingbirds have not yet been found in Campeche, it seems probable that future collecting will reveal its presence along the coast, at least as far south as Champotón, and possibly to Isla del Carmen.

BREEDING. Specimens collected in mid-March (Chapman, 1896) and April had enlarged gonads.

WEIGHT. Two males weighed 4.4 and 4.7 grams; four females 3.4, 3.6, 3.6, and 4.4 grams.

AMAZILIA YUCATANENSIS CERVINIVENTRIS (Gould).

Fawn-breasted Hummingbird. Tsunuum.

Amazilius cerviniventris Gould, Zool. Soc. Lond., Proc., 24:150, 1856. (Córdoba, Veracruz.)

RANGE. The species ranges from southern Texas to Guatemala and British Honduras; the race in Veracruz, Puebla, Chiapas, probably Tabasco, and in extreme southwestern Campeche (Brodkorb, 1943a); *A. y. chalconota* from southern Texas to Hidalgo and northeastern Veracruz; nominate form considered below.

REMARKS. Brodkorb (1943a) collected a single specimen of this race at Palizada in late July.

Although Ridgway (1911) listed the nominate race from San Juan Bautista (= Villahermosa), Tabasco, it is probably merely a migrant there and *A. y. cerviniventris* will be found to be the resident form. On the other hand, it is also possible that Brodkorb's specimen (1943a) was a migrant and that the nominate race is resident as far west as central Tabasco. This, however, appears unlikely since *A. y. yucatanensis* has a decided preference for second growth in deciduous forest and moderately high rain forest on the Peninsula and its presence, without morphological differentiation, in the very wet rain forest of Tabasco and southwestern Campeche would be unexpected.

AMAZILIA YUCATANENSIS YUCATANENSIS (Cabot).

Trochilus yucatanensis Cabot, Boston Soc. Nat. Hist., Proc., 2:74, 1845. (Yucatán.)

RANGE. The race is endemic to the Yucatán Peninsula and adjacent parts of Petén and British Honduras; probably a visitant in Chiapas (Friedmann, Griscom, and Moore, 1950) and Tabasco (Ridgway, 1911).

SPECIMENS. Quintana Roo—Bacalar, 1♀, Feb. 5, 1952; Carrillo Puerto, 1♀, June 10, 1♀, June 15, 1♂, June 19, 1♀, June 22, 1950; Vigía Chico, 1♂, Apr. 11, 1949; Tabi, 1♂, 1♀, Mar. 14, 1949, 1♀, Mar. 25, 1953; Xcan, 1♂, Apr. 29, 1949. Campeche—Ichek, 1♂, Dec. 23, 1949, 1♂, Sept. 21, 1♂, 1♀, 1♀, Sept. 26, 1950, 1♂, Nov. 26, 1952; Champotón, 1♂, Jan. 28, 1951; 2 km. N. Aguada Seca, 1♀, Feb. 6, 1♂, Feb. 8, 1951.

HABITAT. Most abundant in clearings within high deciduous forest and moderately heavy rain forest, becoming progressively less common in lower deciduous forest and higher rain forest.

BREEDING. The specimen collected on February 5 had a nest with two fresh eggs. The nest is composed of wild cotton (*Gossypium* sp.) with a thin external shell of plant fibers and lichens.

The nesting season appears to begin in late January and extends at least until mid-April.

WEIGHT. Five males weighed 3.8, 3.9, 4.1, 4.3, and 4.6 grams; two females 3.8 grams each.

AMAZILIA TZACATL TZACATL (De la Llave).
Rufous-tailed Hummingbird. Tsunuum.

Trochilus tzacatl De la Llave, Registro Trimestre, 2 (5):48, 1833. (Mexico.)

RANGE. The species is distributed from Mexico to Ecuador and Venezuela; the race from southern Tamaulipas through eastern Mexico to Chiapas and southward to Venezuela and Colombia; recorded from Quintana Roo and Campeche, and probably from Yucatán.

SPECIMENS. Quintana Roo—Chetumal, 1♀, Nov. 2, 1♀, Nov. 30, 1948, 1♂, Feb. 8, 1949; Bacalar, 1♀, Feb. 7, 1952; Laguna Chacanbacab, 1♂, Feb. 15, 1950; Carrillo Puerto, 1♂, June 6, 1♂, June 13, 1♂, June 16, 1♂, June 22, 1950; Tabi, 1♀, Mar. 10, 1♀, Mar. 18, 1949, 1♂, Mar. 25, 1953; Ch'ich', 1♀, May 5, 1950. Campeche—Pueblo Nuevo, 1♂, Sept. 22, 1950; 2 km. N. Aguada Seca, 1♀, Feb. 6, 1♀, Feb. 8, 1951.

HABITAT. High deciduous forest and rain forest.

REMARKS. The species is listed as wintering in Yucatán (Friedmann, Griscom, and Moore, 1950), but there appears to be no published record of its occurrence in that State prior to this, and the authors cited no authority for the record.

Boucard (1883) included in his list a hypothetical record of *Amazilia beryllina*, which was said to have been collected by Gaumer in Yucatán. The species had never been taken before, nor has it been collected since, on the Peninsula. It is probably safe to assume that it was a misidentified specimen of *A. tzacatl*, a species which does not appear in Boucard's paper, but which would be less unexpected in the northern, more arid, portion of the Peninsula, since it is very abundant farther south.

BREEDING. Several males taken in February had enlarged testes.

WEIGHT. Two males weighed 4.5 and 5.8 grams; three females 4.4, 4.6, and 4.7 grams.

DORICHA ELIZA (Lesson and DeLattre).
Mexican Shear-tail.

Trochilus eliza Lesson and DeLattre, Rev. Zool., 2:20, 1839. (Between Veracruz and Jalapa, Veracruz.)

RANGE. A monotypic form occurring in central Veracruz, on the coasts of Yucatán and northern Quintana Roo, and on Isla Holbox; the only other representative of the genus, *D. enicura*, ranges from the highlands of Chiapas to El Salvador and Honduras.

SPECIMENS. Quintana Roo—Boca Iglesia, 3♂, Dec. 28, 1950; Isla Holbox, 1♀, Dec. 17, 1950. Yucatán—El Cuyo, 1♀, Dec. 10, 1950; Santa Clara, 1♀, Aug. 29, 1♀, Aug. 31, 1♀, Sept. 2, 1950; Mérida-Progreso Rd., 1♂, Sept. 8, 1950; Sisal, 1♂, Jan. 7, 1951; Celestún, 1♀, Jan. 13, 1951.

HABITAT. Confined to coastal and insular scrub.

REMARKS. The similarity of the females of this species to those of *Chlorostilbon canivetii* and *Archilochus colubris*, and the overlap in their preferred habitats, makes field identification difficult and uncertain, unless the bird comes to rest. It is certainly often overlooked.

There appears to be a great excess of females over males. The only time I have observed what would appear to be a more usual sex ratio was at Boca Iglesia, where the species was extremely common within a small *cocal*.

In other regions Shear-tails were found generally distributed, but less common.

BREEDING. The birds taken at Boca Iglesia had enlarged gonads, but no reproductive activity was noted elsewhere in December or January.

WEIGHT. The male from Sisal, which is in nearly adult plumage, weighed 2.3 grams; three adult females weighed 2.5, 2.6, and 2.7 grams.

ARCHILOCHUS COLUBRIS (Linnaeus).
Ruby-throated Hummingbird.

Trochilus colubris Linnaeus, Syst. Nat., ed. 10, 1:120, 1758. (South Carolina.)

RANGE. A monotypic species breeding over much of eastern North America from southern Saskatchewan east to Nova Scotia and south to southern Texas and Florida; possibly very rarely to northern Mexico; winters from Gulf Coast southward to Panama and rarely in the Greater Antilles; Peninsular records from Yucatán and Quintana Roo, including Islas Cozumel (Salvin, 1889) and Holbox.

SPECIMENS. Quintana Roo—Tabi, 1 ♀, Mar. 14, 1 ♂, Mar. 17, 1949, 1 ♂, Mar. 24, 1 ♀, Mar. 25, 1 ♀, Apr. 13, 1953; Boca Iglesia, 1 ♂, Dec. 28, 1950; Kantunil-Kin, 1 ♀, Apr. 22, 1949. Yucatán—Sucopó, 1 ♀, Apr. 21, 1949; Dzidzantún, 1 ♀, May 3, 1952.

HABITAT. Primarily in the coastal and insular scrub and lower deciduous forest, becoming rarer southward on the Peninsula; absent from rain forest.

REMARKS. The species is a relatively common winter visitant in suitable habitats, but nowhere have I found it more abundant than resident species, as it was claimed to have been at Chichén Itzá (Cole, 1906).

A. colubris occurs within the ranges of *Amazilia candida*, *Chlorostilbon canivetii*, and *Doricha eliza* which makes identification of females and immatures exceedingly difficult, except under the most favorable conditions.

WEIGHT. One male weighed 2.7 and one female 2.9 grams.

Family TROGONIDAE

TROGON MASSENA MASSENA Gould.

Slaty-tailed Trogon.

Trogon massena Gould, Monogr. Trogonidae, pl. 16, 1838. (Mexico.)

RANGE. The species occurs from southern Mexico to northwestern Ecuador; the race from Veracruz south to Nicaragua; at the base of the Peninsula in Campeche (Ridgway, 1911) and Quintana Roo.

SPECIMENS. Quintana Roo—46 km. W. Chetumal, 1 ♂, Feb. 16, 1949; Laguna Chacanbacab, 1 ♂, May 11, 1949; Estero Franco, 1 ♂, Jan. 27, 1949; Agua Blanca, 1 ♂, 1 ♀, June 6, 1949.

HABITAT. Heavy rain forest.

REMARKS. A fairly common bird in the most dense forest of the Peninsula.

BREEDING. The specimen collected in mid-February exhibited slightly enlarged gonads, while those taken in May and June were breeding.

TROGON CITREOLUS MELANOCEPHALA Gould.

Citreoline Trogon. Kux. Kuxtin.

Trogon melanocephala Gould, Monogr. Trogonidae, pl. 12, 1835. (Tamaulipas.)

RANGE. The species is distributed from Mexico to Costa Rica; the race from southern Tamaulipas southward through eastern Mexico, including the entire Yucatán Peninsula, to northern Costa Rica; the nominate form on the Pacific slope of Mexico from Sinaloa to Oaxaca; *T. c. sumichrasti* on the coastal plain from central Oaxaca to Chiapas.

SPECIMENS. Quintana Roo—Chetumal, 1♀, Nov. 10, 1♂, Nov. 24, 1♀, Nov. 26, 1♂, Nov. 27, 1♂, Dec. 4, 1♂, Dec. 7, 1♂, Dec. 8, 1949; Bacalar, 1♂, Feb. 6, 1♂, Feb. 12, 1952; Carrillo Puerto, 1♂, Apr. 13, 1949, 1♂, June 21, 1950; Tabi, 1♀, Apr. 12, 1953, Xcan, 1♂, Apr. 25, 1949. Yucatán—Xocempich, 1♀, Nov. 22, 1951, 1♂, June 3, 1952. Campeche—Ichek, 1♂, July 20, 1950, 1♂, May 24, 1952.

HABITAT. Very generally distributed over the Peninsula; absent only from dense rain forest and coastal scrub.

REMARKS. This is by far the most abundant trogon in the region.

WEIGHT. Five males weighed 72.6, 78.2, 80.2, 86.0, and 88.7 grams; two females, 85.2 and 91.0 grams.

TROGON COLLARIS PUELLA Gould.

Bar-tailed Trogon.

Trogon puella Gould, Zool. Soc. Lond., Proc., 13:18, 1845. (Escuintla, Guatemala.)

RANGE. The species ranges from eastern Mexico southward through Central America to Bolivia; the race from San Luis Potosí and Veracruz through eastern Mexico south to Panama; on the Peninsula in Campeche (Ridgway, 1911), Yucatán (Boucard, 1883), and Quintana Roo.

SPECIMENS. Quintana Roo—Ucum, 1♂, Feb. 20, 1952; 24 km. NW. Xtocomo, 1♀, Feb. 25, 1951; Carrillo Puerto, 1♂, Apr. 28, 1♂, June 12, 1♂, June 19, 1950; Tabi, 1♀, Mar. 10, 1949; Kantunil-Kín, 1♂, Apr. 24, 1949; Xcan, 1♂, Apr. 26, 1949.

HABITAT. Appears to occur only within tall second growth in the zone of high deciduous forest and in the same type of habitat, but much more rarely, in the zone of light rain forest.

REMARKS. This is the rarest of the trogons found on the Peninsula.

BREEDING. The specimen collected in late April at Kantunil-Kín was in breeding condition, but one taken two days later at Xcan exhibited no indications of breeding.

WEIGHT. Two males weighed 47.6 and 53.5 grams; two females 41.1 and 53.9 grams.

TROGON VIOLACEUS BRACCATUS (Cabanis and Heine).

Violaceous Trogon.

Aganus braccatus Cabanis and Heine, Mus. Hein., 1:184, 1863. (Valle Real, Veracruz.)

RANGE. The species occurs from Mexico to Amazonia; the race from southern Tamaulipas and San Luis Potosí through eastern Mexico to Honduras and El Salvador, and probably Nicaragua; found in Yucatán, Quintana Roo, and Campeche.

SPECIMENS. Quintana Roo—Carrillo Puerto, 1♀, June 10, 1♂, June 19, 1♀, June 20, 1950; Tabi, 1♀, Mar. 15, 1949; Xcan, 1♂, Apr. 26, 1♀, Apr. 29, 1949. Yucatán—Xocempich, 1♂, May 12, 1949. Campeche—Ichek, 1♂, May 24, 1952.

HABITAT. The habitat preference for this species is essentially the same as for *Trogon collaris*, but differs from it in including, to some extent, moderately high deciduous forest.

REMARKS. Although not an abundant species, it is not so rare as *Trogon collaris*.

BREEDING. A specimen collected in mid-March exhibited a slightly enlarged ovary. A female taken in late April at Xcan was nearly in breeding condition, although a male collected three days earlier at the same locality showed no indications of breeding. The bird collected on June 10 contained a large egg.

WEIGHT. A male weighed 54.8 grams and two females 53.7 and 57.2 grams.

Family ALCEDINIDAE

CERYLE TORQUATA TORQUATA (Linnaeus).

Ringed Kingfisher. Martín Pescador.

Alcedo torquata Linnaeus, Syst. Nat., ed. 12, 1:180, 1766. (Martinique and Mexico.)

RANGE. The species is distributed throughout Middle and South America and on the Lesser Antilles; the race from Sinaloa and Tamaulipas southward to Peru, northern Argentina and Uruguay; on the Peninsula in Quintana Roo and Campeche.

SPECIMENS. Quintana Roo—Bacalar, 1♂, Feb. 12, 1♀, Feb. 13, 1952; Estero Franco, 1♂, Jan. 27, 1949; Laguna Chacanbacab, 1♀, May 11, 1949, 1♀, Feb. 15, 1951. Campeche—Champton, 1♀, Sept. 23, 1950.

HABITAT. Chiefly on rivers and inland bodies of water; more rarely in sheltered coastal areas.

REMARKS. The species has not been recorded from Yucatán but it is undoubtedly present, at least in the sheltered lagoon behind the barrier bar. It is common in fresh water localities in Quintana Roo and Campeche.

BREEDING. A female taken on May 11 had a slightly enlarged ovary.

WEIGHT. A female weighed 310.0 grams.

CERYLE ALCYON ALCYON (Linnaeus).

Belted Kingfisher. Martín Pescador.

Alcedo alcyon Linnaeus, Syst. Nat., ed. 10, 1:115, 1758. (South Carolina.)

RANGE. The species breeds from Alaska and Canada to the southern United States; the race from Mackenzie east to Labrador and southward

over the entire United States east of the Rocky Mountains; winters from mid-United States through eastern Mexico, the West Indies, and Central America, rarely to northwestern South America; collected in Quintana Roo (Peters, 1913), including Isla Cozumel (Salvin, 1889), and in Yucatán; sight records from Triángulo Oeste, Campeche (Paynter, 1953), Arrecife Alacrán, Yucatán (Paynter, 1953), and Isla Holbox, Isla Contoy, and Banco Chinchorro, Quintana Roo.

SPECIMENS. Yucatán—Celestún, 1 ♀, Jan. 12, 1951; Progreso, 1 ♂, Sept. 7, 1 ♀, Sept. 8, 1950; Santa Clara, 1 ♂, Dec. 15, 1951.

HABITAT. Coastal and insular; rarely inland.

REMARKS. The Belted Kingfisher is a very common visitor in Yucatán and Quintana Roo along the coasts and on islands. It has never been recorded from the mainland of Campeche but there is no doubt that it occurs there.

WEIGHT. One female weighed 149.0 grams.

CHLOROCERYLE AMAZONA MEXICANA Brodkorb.

Amazon Kingfisher. Martín Pescador.

Chloroceryle amazona mexicana Brodkorb, Auk, 57:543, 1950. (Barra de Cahucán, Chiapas.)

RANGE. The species ranges from Mexico through Central America and over the greater part of South America to Ecuador and Argentina; the race from southern Sinaloa and southern Tamaulipas to Panama; on the Peninsula in southern Quintana Roo and one very doubtful record from Yucatán (Boucard, 1883).

SPECIMEN. Quintana Roo—Estero Franco, 1 ♀, Jan. 25, 1949.

HABITAT. Known only from the upper portion of the Río Hondo.

REMARKS. The species was very uncommon at Estero Franco and seen nowhere else on the Peninsula.

Boucard (1883) included the species within the list of specimens received from Gaumer from Yucatán, but the specimen was not present when the collection was examined by Salvin (*in* Boucard, 1883). It is doubtful that it would be collected in Yucatán since it is a species usually found on quiet rivers in heavily forested areas.

BREEDING. The specimen had an enlarged ovary.

CHLOROCERYLE AMERICANA SEPTENTRIONALIS (Sharpe).

Green Kingfisher. Martín Pescador.

Ceryle septentrionalis Sharpe, Cat. Birds Brit. Mus., 17:134, 1892. (Teapa, Tabasco.)

RANGE. The species is found from Texas southward through Mexico and Central America to Bolivia and Argentina; the race from southeastern Texas through all but northwestern Mexico to Guatemala and El Salvador; on the Peninsula in Quintana Roo, Campeche, and Yucatán; *C. a. hachisukai* contiguous in western Texas and northwestern Mexico south to Nayarit and northern Coahuila.

SPECIMENS. Quintana Roo—Bacalar, 1♂, June 10, 1951; Ucum, 1♀, Feb. 22, 1952; Estero Franco, 1♀, Jan. 25, 1♂, 1♀, Jan. 27, 1949; Laguna Chacanbacab, 1♂, May 15, 1949. Yucatán—Celestún, 1♂, Jan. 12, 1951; Santa Clara, 1♂, Sept. 12, 1♂, Sept. 16, 1950, 1♀, May 14, 1952. Campeche—Pueblo Nuevo, 1♀, Sept. 22, 1950; Champotón, 1♂, July 15, 1950, 1♂, Jan. 27, 1951; 2 km. N. Aguada Seca, 1♀, Feb. 7, 1951.

HABITAT. Vicinity of fresh water and coastal lagoons.

REMARKS. This is the most common kingfisher on the Peninsula. It is extremely abundant in the southern portion of the Peninsula, but much less common in Yucatán.

BREEDING. The reproductive season appears to be prolonged. I have collected breeding specimens in mid-January, late January, and mid-May. Other specimens taken in late January and in early February exhibited no indications of breeding.

WEIGHT. Three males weighed 35.2, 36.4, and 40.4 grams; one female 33.1 grams.

CHLOROCERYLE AENEA STICTOPTERA (Ridgway).

Pygmy Kingfisher. Martín Pescador Chico.

Ceryle superciliosa stictoptera Ridgway, Biol. Soc. Wash., Proc., 2:95, 1884. (Sisal, Yucatán.)

RANGE. The species occurs from southern Mexico to western Ecuador and southern Brazil; the race from Veracruz and Oaxaca south to Nicaragua and Bonacca Island; throughout the Peninsula, including Isla Cozumel (Salvin, 1889).

SPECIMENS. Quintana Roo—Bacalar, 1♂, May 25, 1952; 24 km. NW. Xtocomo, 1♂, Feb. 23, 1951; Laguna Chacanbacab, 1♀, May 13, 1948; Estero Franco, 1♂, Jan. 25, 1949. Yucatán—Santa Clara, 1♀, Jan. 4, 1952. Campeche—Champotón, 1♂, July 15, 1950.

HABITAT. Essentially the same as that of *C. americana*, except that it is also found at small bodies of water in dense forest.

REMARKS. The species is known from Isla Cozumel from one specimen (Salvin, 1889). However, it is probably not so rare as the single record would imply, since most collectors have worked in the vicinity of the town of San Miguel, a region devoid of sheltered lagoons, rather than in other parts of the island where habitats are more suitable for the species.

BREEDING. The specimen taken at Estero Franco in January had enlarged gonads, while one taken near Xtocomo in late February and another from Laguna Chacanbacab in mid-May exhibited no indications of breeding.

WEIGHT. A male weighed 16.5 and a female 17.7 grams.

Family MOMOTIDAE

HYLOMANES MOMOTULA MOMOTULA Lichtenstein.

Tody Motmot.

Hylomanes momotula Lichtenstein, Abh. Akad. Wiss. Berlin for 1838:449, 1839. (Valle Real, [Veracruz?].)

RANGE. A monospecific genus ranging from southern Mexico to northwestern Colombia; the race from Veracruz to Honduras; one record from southern Quintana Roo; *H. m. chiapensis*, of doubtful validity, on the Pacific slope of Chiapas; *H. m. obscurus* for the remainder of the range.

SPECIMEN. Quintana Roo—12 km. W. Bacalar, 1♂, Apr. —, 1950.

HABITAT. Heavy rain forest.

REMARKS. The collection of this species at the base of the Peninsula is not surprising since it is fairly abundant in adjacent Petén (Van Tyne, 1935). Its presence in southern Campeche is to be expected.

I have never observed the species, but my local assistant, who collected the specimen, is familiar with it and said that it can be found with some regularity in the heavy forest of southern Quintana Roo. Its silent and phlegmatic behavior renders it extremely difficult to observe.

EUMOMOTA SUPERCILIOSA SUPERCILIOSA (Sandbach).

Turquoise-browed Motmot. Toj.

Pyronites superciliosa Sandbach, Athenaeum, no. 517:698, 1837. (Campeche.)

RANGE. The species ranges from southern Mexico to Costa Rica; the race on the Yucatán Peninsula, doubtfully including Isla Cozumel (Ridgway, 1914), and in Tabasco; *E. s. bipartita* contiguous in Veracruz, Oaxaca, Chiapas, and the Pacific slope of Guatemala; *E. s. sylvestris* in the Caribbean lowlands of Guatemala.

SPECIMENS. Quintana Roo—Carrillo Puerto, 2♂, Apr. 11, 1♀, Apr. 13, 1949, 1♂, June 28, 1950; Tabi, 1♂, Mar. 18, 1949; Tulum, 1♀, Mar. 18, 1949; Xcan, 1♂, Apr.

26, 1 ♀, Apr. 28, 1949. Yucatán—Uxmal, 1 ♀, Jan. 17, 1 ♀, Jan. 18, 1951; Dzidzantún, 1 ♀, Jan. 26, 1952. Campeche—Champotón, 1 ♂, Jan. 24, 1951.

HABITAT. Deciduous forest; rarely in coastal scrub.

REMARKS. *E. superciliosa* is a species of more arid areas whereas *Momotus momota* is found in wetter regions. Where the low deciduous forest intergrades with higher forest the two species may occur in the same general area, but they are usually present in different biotopes.

E. superciliosa often occurs in large numbers in the vicinity of ruins and rocky hillsides, but *M. momota* is never found in such great concentrations, even in its most suitable habitats.

There is a specimen in the National Museum (Ridgway, 1914) which is labeled as having been collected by Gaumer on Isla Cozumel. Dr. Friedmann has examined this specimen and has written me that the label is possibly not the original one, since the locality has been put on with a rubber stamp. There is no other record from the island, and I suspect that this is a mainland bird which was incorrectly labeled.

BREEDING. Specimens taken in April were in various stages of reproductive activity.

WEIGHT. Five males weighed 57.2, 65.6, 66.3, 69.4, and 71.8 grams; three females, 56.8, 57.4, and 61.1 grams.

MOMOTUS MOMOTA EXIGUUS Ridgway.
Blue-crowned Motmot. Jut Jut.

Momotus lessonii exiguus Ridgway, Biol. Soc. Wash., Proc., 25:89, 1912. (Temax, Yucatán.)

RANGE. The species occurs from northeastern Mexico to northern Argentina; the race endemic to the Yucatán Peninsula; *M. m. lessonii*, ranging from central Veracruz to Panama, contiguous in extreme southern Quintana Roo and Campeche.

SPECIMENS. Quintana Roo—Bacalar, 1 ♂, Feb. 7, 1952; Carrillo Puerto, 1 ♀, June 8, 1950; 5 km. NW. Vigía Chico, 1 ♀, Apr. 9, 1949; Tabi, 1 ♀, Mar. 10, 1 ♂, Mar. 11, 1 ♀, Mar. 17, 1949, 1 ♂, Apr. 14, 1953; Ch'ich', 1 ♂, May 5, 1950; Xcan, 1 ♀, Apr. 26, 2 ♂, Apr. 27, 1 ♀, Apr. 28, 1949, 2 ♂, Apr. 19, 1952; 15 km. NW. Kantunil-Kín, 1 ♀, Dec. 31, 1950. Campeche—Champotón, 1 ♂, Jan. 23, 1951.

HABITAT. Primarily in rain forest and high deciduous forest; rarely in low deciduous forest.

REMARKS. The type locality of this race is on the northern perimeter of the Peninsular population, which presumably reaches the limit of its distribution at this point because of the aridity of the area and the resulting low forest—a habitat more suited to *Eumomota superciliosa*. The species is rare in northern Yucatán, but the characters of the race are most marked in that area, as is to be expected. Southward there is a clinal decrease in the characters of *M. m. exiguus* and specimens from the

heavy forest of southern Quintana Roo and Campeche are referred to *M. m. lessonii*.

M. m. exiguus is supposedly distinguished from *M. m. lessonii* by its lighter and greener coloration, and by its smaller size. A comparison of a large series of specimens from the Peninsula with a large series of *M. m. lessonii* reveals that there is only a slight tendency toward lighter and greener coloration in a few of the most northern Peninsular birds. There is such a wide variation in coloration, even within a single population, that any identification based on this character is of extremely limited use.

As has already been pointed out by Ridgway (1914) and Wetmore (1943), the small wing and bill of *M. m. exiguus* are distinctive. However, only the most northern Peninsular specimens have wings as small as indicated by Ridgway (1914) and Wetmore (1943); birds from central Quintana Roo are slightly larger and their measurements overlap those of small examples of *M. m. lessonii*. No difference in the length of the bill between the two races can be found, although Ridgway (1914), measuring the exposed culmen, indicated that there is. In circumference, however, the bill of *M. m. exiguus* is distinctly smaller.

BREEDING. Birds with enlarged gonads have been taken from early April to late May. Breeding probably extends even later in the year, but specimens with data are lacking.

WEIGHT. In comparing a series of *M. m. exiguus* with a series of *M. m. lessonii* one is impressed by the general smallness of the Peninsular race, although linear measurements fail to indicate a vast difference in size. The weights of the specimens confirm this impression. Three males from Tabi, Xcan, and Champotón weighed 83.9, 92.3, and 102.0 grams, respectively; two females from Tabi and one from Xcan weighed 76.6, 80.9, and 90.7 grams, respectively. All of these weights are well below those for like sexes in *M. m. lessonii*, as indicated below.

MOMOTUS MOMOTA LESSONII Lesson.

Momotus lessonii Lesson, Rev. Zool., 5:174, 1842. (Realejo, Nicaragua.)

RANGE. The race occurs from central Veracruz to Panama; on the Peninsula in extreme southern Quintana Roo and Campeche.

SPECIMENS. Quintana Roo—Chetumal, 1♀, Feb. 24, 1♂, Mar. 1, 1949; Laguna Chacabacab, 1♂, May 21, 1949. Campeche—2 km. N. Aguada Seca, 1♀, Feb. 5, 1♀, Feb. 6, 1♂, Feb. 9, 1951.

HABITAT. Rain forest.

REMARKS. These specimens are not true *M. m. lessonii*, although they are closer to that race than *M. m. exiguus*. Traylor (1941) expressed the same opinion concerning his material from Matamoros and Pacaytun.

BREEDING. The bird collected in late May was breeding.

WEIGHT. A male from Chetumal, and one from Aguada Seca, weighed 115.0 and 116.8 grams, respectively; two females from Aguada Seca weighed 96.7 and 104.8 grams. Van Tyne (1935) recorded the weights of four males from Petén as 108, 113.5, 118, and 119.5 grams.

Family GALBULIDAE

GALBULA RUFICAUDA MELANOGENIA, Sclater. Rufous-tailed Jacamar.

Gabula melanogenia Sclater, Jardine's Contr. Ornith. for 1852, p. 61, 1853. (Locality uncertain.)

RANGE. The species ranges from southern Mexico to northern Argentina; the race from Veracruz southward through Central America to western Ecuador; on the Peninsula in extreme southern Campeche and Quintana Roo.

SPECIMENS. Quintana Roo—Laguna Chacanbacab, 1♀, May 11, 1♂, May 12, 1949; Agua Blanca, 1♂, May 31, 1949. Campeche—2 km. N. Aguada Seca, 1♂, Feb. 5, 1♂, Feb. 7, 1951.

HABITAT. Dense rain forest.

REMARKS. Previously there existed only one record for Campeche (Traylor, 1941) and one record for Quintana Roo (Peters, 1913), but the species is not uncommon in the heaviest forest.

BREEDING. The three May specimens were breeding.

WEIGHT. The males weighed 24.2, 26.0, 26.5, and 28.4; the female 28.4 grams.

Family BUCCONIDAE

NOTHARCUS MACRORHYNCHOS HYPERRYNCHUS (Sclater). White-necked Puffbird.

Bucco hyperryynchus Sclater, Zool. Soc. Lond., Proc., 23:193, 1855(–1856). (Upper Amazon.)

RANGE. The species is distributed from southern Mexico to northern Argentina; the race from Veracruz south through Central America to Bolivia and Venezuela, with the exception of the Pacific slope of El Salvador and northwestern Nicaragua; on the Peninsula in southern Campeche and Quintana Roo.

SPECIMENS. Quintana Roo—Chetumal, 1♂, Dec. 3, 1948; Bacalar, 1♂, Feb. 18, 1952; 12 km. W. Bacalar, 1♂, Apr. —, 1950. Campeche—2 km. N. Aguada Seca, 1♂, Feb. 8, 1951; 100 km. E. Escárcega, 1♀, Feb. 13, 1951.

HABITAT. Heavy rain forest.

REMARKS. Although puffbirds seem to be uncommon, their habit of

perching quietly in high dead trees renders them difficult to observe. They are probably more abundant than it appears.

WEIGHT. Two males weighed 83.9 and 93.1 grams.

Family RAMPHASTIDAE

AULACORHYNCHUS PRASINUS VIRESCENS Ridgway. Emerald Toucanet.

Aulacorhynchus prasinus virescens Ridgway, Biol. Soc. Wash., Proc., 25:88, 1912. (Chasniguas, Honduras.)

RANGE. A highly polytypic species which occurs from central Mexico to Peru and Venezuela; the race from Quintana Roo (Peters, 1913) southward through Petén and British Honduras to northern Nicaragua; contiguous races are the nominate form from San Luis Potosí and Veracruz to Oaxaca, and *A. p. stenorhabdus* from Chiapas through western Guatemala to northern El Salvador.

HABITAT. Heavy rain forest.

REMARKS. Peters (1913) took the only specimens of the species from the Peninsula at Camp Mengel (= Alvaro Obregón) on the Río Hondo.

I saw the species once at Laguna Chacanbacab. Baeza has found it regularly in the heavy forest of Quintana Roo from Laguna Bacalar southward, although it is extremely rare.

PTEROGLOSSUS TORQUATUS ERYTHROZONUS Ridgway. Collared Araçari. Panch'el.

Pteroglossus torquatus erythrozonus Ridgway, Biol. Soc. Wash., Proc., 25:88, 1912. (Temax, Yucatán.)

RANGE. The species occurs from southern Mexico to Venezuela; the race endemic to the Yucatán Peninsula, and adjacent Petén and British Honduras; the nominate form from Veracruz to Panama, except in western Costa Rica and Panama.

SPECIMENS. Quintana Roo—Chetumal, 1♂, Nov. 7, 1♀, Nov. 26, 1♂, 1♀, Dec. 7, 1♀, Dec. 24, 1948; Xulha, 1♂, Nov. 11, 1948; Bacalar, 1♀, Feb. 10, 1952. Yucatán—Xocempich, 1♂, Apr. 19, 1949.

HABITAT. Throughout the forested areas, but more common in rain forest.

WEIGHT. Four males weighed 168.2, 170.0, 175.2, and 175.6 grams; three females, 154.7, 175.2, and 181.1 grams.

RAMPHASTOS SULFURATUS SULFURATUS Lesson.
Keel-billed Toucan. Pito Real.

Ramphastos sulfuratus Lesson, *Traité d'Ornith.*, 3:173, 1830. (Mexico.)

RANGE. The species is distributed from southern Mexico to Colombia and Venezuela; the race from Puebla and Veracruz to British Honduras and northern Guatemala; on the Peninsula in Yucatán (Boucard, 1883), Campeche (Traylor, 1941), and Quintana Roo; *R. s. brevicarinatus* for the remainder of the range.

SPECIMENS. Quintana Roo—Chetumal, 1♀, Dec. 24, 1948; Xulha, 1♂, Nov. 11, 1948; 46 km. W. Chetumal, 1♂, Feb. 13, 1949; Bacalar, 1♀, Oct. 28, 1952; Carrillo Puerto, 1♀, Nov. 26, 1947; Kantunil-Kín, 1♂, Apr. 23, 1949.

HABITAT. Chiefly rain forest; rarely in high deciduous forest.

REMARKS. Traylor (1941) found a large flock of toucans at Chichén Itzá in October, although the species is seldom observed north of the rain forest. The six specimens taken from the flock were first-year birds which suggests that the entire flock, or at least a large part of it, was composed of young birds. It is probable that young toucans wander widely and this accounts for their presence in large numbers north of their usual range.

Family PICIDAE

PICULUS RUBIGINOSUS YUCATANENSIS (Cabot).
Golden-olive Woodpecker. Carpintero Verde.

Picus yucatanensis Cabot, *Boston Soc. Nat. Hist., Proc.*, 1:164, 1844. (On the road from Chemax [Yucatán] to Yalahao [= Yalahau, Quintana Roo].)

RANGE. The species is distributed from Mexico to northwestern Argentina; the race on the Yucatán Peninsula in Campeche (Traylor, 1941), Yucatán, and Quintana Roo, and north to southern Veracruz and south to Nicaragua, with the exception of the mountains of Guatemala and adjacent Chiapas, which are occupied by *P. r. maximus*, and the Pacific slope of Guatemala, occupied by doubtfully distinct *P. r. differens*; *P. r. aeruginosus*, contiguous to the north.

SPECIMENS. Quintana Roo—Chetumal, 1♀, Dec. 22, 1948; Bacalar, 1♂, Feb. 9, 1♂, Feb. 16, 1952; Carrillo Puerto, 1♀, June 13, 1♀, June 21, 1950; Tabi, 1♂, Mar. 24, 1♀, Mar. 30, 1953; Tulum, 1♂, Jan. 13, 1949. Yucatán—Santa Clara, 1♀, June 14, 1949, 1♀, Aug. 22, 1950.

HABITAT. Forested areas throughout the Peninsula; rarely in coastal scrub.

REMARKS. The species is rare in the deciduous forest, but becomes

progressively more abundant southward on the Peninsula. It is, however, one of the less common woodpeckers in the region.

The presence of *P. rubiginosus* in the low scrub at Santa Clara is surprising. The two specimens are in abraded plumage and appear slightly more pallid than equally worn specimens from Carrillo Puerto.

WEIGHT. A male and a female weighed 76.9 and 76.4 grams, respectively.

CELEUS CASTANEUS (Wagler).
Chestnut-colored Woodpecker.

Picus castaneus Wagler, Isis, 22, col. 515, 1829. (Veracruz.)

RANGE. A monotypic species ranging from Veracruz southward to Panama; on the Peninsula in Yucatán (Boucard, 1883), Quintana Roo, and Campeche.

SPECIMENS. Quintana Roo—46 km. W. Chetumal, 1♂, Feb. 16, 1949; Agua Blanca, 1♂, June 3, 1♀, June 6, 1949; Carrillo Puerto, 1♀, June 8, 1950. Campeche—2 km. N. Aguada Seca, 1♂, Feb. 5, 1♀, Feb. 7, 1951.

HABITAT. An uncommon species occurring principally in the heaviest rain forest across the base of the Peninsula. Occasionally ranges to the northeastern corner of Yucatán, but never in deciduous forest.

BREEDING. The specimens collected in early June had moderately enlarged gonads.

WEIGHT. Three males weighed 80.0, 84.0, and 95.5 grams; two females, 71.9 and 79.7 grams.

DRYOCOPUS LINEATUS SIMILIS (Lesson).
Lineated Woodpecker. Carpintero Grande. Colonté.

Picus similis Lesson, Desc. de Mamm. et d'Ois. récomm. decouv., p. 204, 1847. (La Unión, El Salvador.)

RANGE. The species occurs from Mexico to northern Argentina; the race from eastern Veracruz and eastern Oaxaca southward, including the entire Yucatán Peninsula, to northern Costa Rica; *D. l. petersi* from the interior of Veracruz northward; *D. l. scapularis* from western Oaxaca along the west coast to southern Sinaloa; *D. l. obsoletus* in northwestern Mexico.

SPECIMENS. Quintana Roo—Chetumal, 1♀, Dec. 15, 1♂, Dec. 29, 1948, 1♂, Oct. 29, 1952; Bacalar, 1♂, Feb. 5, 1♂, Feb. 13, 1952; Carrillo Puerto, 1♀, June 13, 1950; Tabi, 1♀, Mar. 8, 1949. Yucatán—Xocempich, 1♂, May 1, 1♂, Nov. 24, 1949, 1♀, July 15, 1952; Santa Clara, 1♀, Mar. 9, 1951; Uxmal, 1♂, Jan. 17, 1951. Campeche—Ichek, 1♀, Sept. 26, 1950; 2 km. N. Aguada Seca, 1♀, Feb. 5, 1951.

HABITAT. Throughout the Peninsula, but rarely in coastal scrub and dense rain forest.

REMARKS. The differences in ecological requirements between this species and *Phloeoceastes guatemalensis* are obscure. *Dryocopus lineatus* has a wider range on the Peninsula, extending into the zone of low deciduous forest and coastal scrub where *P. guatemalensis* is absent. There is considerable overlap in the area of high forests, whether rain or deciduous types, but *D. lineatus* is the more common species in second growth and clearings, while *P. guatemalensis* is the more common species in dense forest. To generalize, it appears that *D. lineatus* is capable of existing in a much wider range of the habitats found on the Peninsula, although preferring lower forest, than *P. guatemalensis*.

BREEDING. There are breeding records for a specimen with enlarged testes taken on December 29, and for one with a moderately enlarged ovary taken on March 8.

WEIGHT. Two males weighed 142.5 and 157.7 grams; two females, 140.3 and 162.2 grams.

CENTURUS AURIFRONS VERAECRUCIS (Nelson).

Golden-fronted Woodpecker. Carpintero. Ch'ujut. Ch'ujum.

Melanerpes dubius veraecrucis Nelson, Auk, 17:259, 1900. (Coatzacoalcos, Veracruz.)

RANGE. A highly polytypic species occurring from Texas to Costa Rica; the race from south-central Veracruz through Tabasco to northern Chiapas and extreme southwestern Campeche (Brodkorb, 1943a), and probably adjacent parts of Petén; *C. a. grateloupensis* contiguous to the north and west, *C. a. polygrammus* to the south, *C. a. frontalis* to the southeast, and *C. a. dubius* to the east.

REMARKS. This race is known on the Peninsula from two specimens taken at Palizada, in extreme southwestern Campeche (Brodkorb, 1943a).

CENTURUS AURIFRONS DUBIUS (Cabot).

Picus dubius Cabot, Boston Soc. Nat. Hist., Proc., 1:164, 1844. (Uxmal, Yucatán.)

RANGE. The race is endemic to the Yucatán Peninsula, and contiguous parts of British Honduras and Petén; adjacent races are *C. a. veracruzis* to the southwest, *C. a. santacruzii* to the south, probably *C. a. pauper* to the southeast, and *C. a. leei* on Isla Cozumel.

SPECIMENS. Quintana Roo—Chetumal, 1♂, Nov. 6, 1♂, Nov. 14, 1♀, Nov. 15, 1♀, Nov. 21, 1♂, Nov. 26, 1♀, Dec. 3, 1♂, 1♀, Dec. 4, 1♀, Dec. 7, 1948, 1♂, Jan. 21, 1949; Isla Tamalcab, 1♀, Dec. 12, 1948; Bacalar, 1♀, Feb. 19, 1952; Tabi, 1♂, Mar. 10, 1949; 1♀; Tulum, 1♂, Jan. 13, 1949; Ch'ich', 1♂, May 5, 1950; 15 km. NW.

Kantunil-Kín, 1♂, Dec. 30, 1950. Campeche—Champotón, 1♀, Jan. 22, 1♂, 1♀, Jan. 23, 1951.

HABITAT. Chiefly a species of high and moderately high deciduous forest, but occurs within the zone of rain forest in second growth; absent from low scrub.

REMARKS. Both Wetmore (1943) and Peters (1948) have included the "island" of Meco within the range of the insular form, *C. a. leei*, although apparently the only specimen from there was secured by Gaumer and it could not be distinguished by Salvin (1889) from the mainland race. From Salvin's (1889) description of this single specimen it is evident that it must be *C. a. dubius*. This assumption is further strengthened by the fact that specimens from Puerto Morelos and La Vega, two coastal localities just a short distance from Meco, were referred to *C. a. dubius* by Ridgway (1914).

C. aurifrons is the most abundant woodpecker on the Peninsula. Its ecological relationship with the sibling species *C. pygmaeus* is somewhat parallel to the condition found between *Dryocopus lineatus* and *Phloeoceastes guatemalensis*, except that neither species of *Centurus* is present in the interior of heavy rain forest.

C. aurifrons is most common in the high and moderately high deciduous forests, and in second growth within the zone of rain forest. On the other hand, *C. pygmaeus* is most common in low and moderately high deciduous forests and in coastal scrub. It occurs sparingly in high deciduous forest and in second growth in the rain forest region. Although both species coexist in some areas, the center of distribution of *C. aurifrons*, the larger species, is in higher forests, and that of *C. pygmaeus*, the smaller species, is in lower forests.

WEIGHT. Nine males weighed from 81.0 to 94.7, with a mean of 87.70 ± 1.53 grams. Eight females ranged from 71.1 to 84.4, with a mean of 76.42 ± 1.40 grams.

CENTURUS AURIFRONS LEEI Ridgway.

Centurus leei Ridgway, Biol. Soc. Wash., Proc., 3:22, 1885. (Isla Cozumel, Quintana Roo.)

RANGE. Endemic to Isla Cozumel.

SPECIMENS. Quintana Roo—Isla Cozumel, 1♀, Jan. 3, 1♂, Jan. 6, 1♂, Jan. 17, 1949.

HABITAT: Deciduous forest.

REMARKS. Ridgway (1914) suggested that the species might be found on Isla Mujeres and tentatively included the island within the range of *C. a. leei*. All subsequent authors (Wetmore, 1943; Peters, 1948) have followed suit, although I am unable to discover any record of this woodpecker having been collected, or even seen, on that island. After making

a careful investigation of the avifauna of Isla Mujeres, coupled with a knowledge of the habitat requirements of the species, I am nearly certain that it will not be found there.

BREEDING. The specimen collected on January 17 had enlarged testes. This is the only breeding datum for the species within the area covered in this work.

WEIGHT. The two males weighed 84.3 and 89.0; the female, 79.0 grams.

CENTURUS PYGMAEUS RUBRICOMUS (Peters).

Red-vented Woodpecker. Carpintero. Ch'ujut. Ch'ujum.

Melanerpes rubricapillus rubricomus Peters, Check-list Bds. World, 6:164, 1948. (Mérida, Yucatán.)

RANGE. The species occurs on the Yucatán Peninsula, including Isla Cozumel, and on Bonacca Island, Gulf of Honduras; the race is endemic to the mainland of the Peninsula.

SPECIMENS. Quintana Roo—Chetumal, 1 ♀, Nov. 8, 1 ♂, Nov. 27, 1 ♂, Nov. 29, 1 ♂, Dec. 2, 1948, 1 ♂, June 24, 1949; Carrillo Puerto, 1 ♀, Apr. 22, 1 ♂, June 5, 1 ♀, June 14, 1 ♂, June 17, 1950; Tabi, 1 ♂, Mar. 11, 1 ♂, Mar. 17, 1 ♂, Mar. 18, 1949; 1 ♂, Mar. 27, 1 ♀, Mar. 31, 1 ♀, Apr. 3, 1953; Xcan, 1 ♂, Apr. 28, 1949. Yucatán—Xocem-pich, 1 ♂, Oct. 10, 1951, 1 ♀, July 15, 1952; Santa Clara, 1 ♀, Mar. 27, 1 ♂, Aug. 28, 1 ♂, Sept. 13, 1950; Temax, 1 ♂, Oct. 22, 1951. Campeche—Ichek, 1 ♀, Dec. 22, 1949, 1 ♂, Sept. 26, 1950, 1 ♀, Apr. 22, 1 ♀, May 23, 1952.

HABITAT. Ranges from coastal scrub to moderately high deciduous forest, and in second growth within the rain forest zone.

REMARKS. This species is less common than *C. aurifrons*, even in the most suitable habitats.

BREEDING. A specimen collected on April 3 had a moderately enlarged ovary, and one collected on May 23 contained well developed ova.

WEIGHT. Six mature males weighed 39.3, 40.0, 40.8, 42.3, 42.4, and 42.5, one immature male 37.9, and one adult female 35.1 grams.

CENTURUS PYGMAEUS PYGMAEUS Ridgway.

Centurus rubriventris pygmaeus Ridgway, U. S. Nat'l Mus., Proc., 8:576, 1885. (Isla Cozumel, Quintana Roo.)

RANGE. Endemic to Isla Cozumel.

SPECIMENS. Quintana Roo—Isla Cozumel, 1 ♂, Jan. 6, 1 ♀, Jan. 7, 1949, 1 ♀, Feb. 2, 1951, 1 ♂, June 5, 1952.

HABITAT. Deciduous forest.

REMARKS. On the island, this species appears to be slightly less abundant than *C. aurifrons*.

WEIGHT. A male and female weighed 38.7 and 35.7 grams, respectively.

SPHYRAPICUS VARIUS VARIUS (Linnaeus).
Yellow-bellied Sapsucker.

Picus varius Linnaeus, Syst. Nat., ed. 12, 1:176, 1766. (South Carolina.)

RANGE. The species breeds from southeastern Alaska through much of Canada and the United States; the race from Alberta east to Newfoundland and south to Missouri and New England, and southward in the Appalachians to Georgia; winters from southeastern United States through eastern and central Mexico to Panama, and in the greater Antilles; recorded on the Peninsula in Quintana Roo (Griscom, 1926a) and Yucatán.

SPECIMEN. Yucatán—Xocempich, 1♀, Jan. 6, 1950.

HABITAT. Known only from deciduous forest.

REMARKS. Sapsuckers are rare winter visitants, having been recorded only twice before—once from Yucatán (Lawrence, 1869) and once from central coastal Quintana Roo (Griscom, 1926a).

VENILIORNIS FUMIGATUS SANGUIOLENTUS (Sclater).
Smoky-brown Woodpecker.

Chloronerpes sanguinolentus Sclater, Zool. Soc. London, Proc., 27:60, 1859. (Omoa, Honduras.)

RANGE. The species occurs from Mexico to Bolivia; the race from southern Veracruz and Oaxaca to Panama; on the Peninsula in Yucatán (Boucard, 1883), Quintana Roo, and Campeche; *V. f. oleagineus* from Veracruz and Puebla to San Luis Potosí.

SPECIMENS. Quintana Roo—46 km. W. Chetumal, 1♀, Feb. 14, 1949; Carrillo Puerto, 1♀, Apr. 20, 1♂, 1♀, May 22, 1♂, May 26, 1♀, June 5, 1♂, June 6, 2♂, June 16, 1950; Tabi, 1♂, Mar. 14, 1♂, Mar. 19, 1949, 1♂, 1♀, Mar. 31, 1♂, Apr. 13, 1953; Xcan, 1♂, Apr. 26, 2♂, Apr. 27, 1949. Campeche—2 km. N. Aguada Seca, 1♂, Feb. 8, 2♂, Feb. 10, 1951.

HABITAT. Light rain forest and very rarely in deciduous forest.

REMARKS. This woodpecker occurs within the rain forest, but usually in areas where the forest is low and the understory is dense. Such regions are comparatively rare on the Peninsula since a forest is usually either a rain forest with a comparatively open floor, or else it is a deciduous forest. The species, therefore, is localized to a great extent. The environs of Carrillo Puerto and Tabi are particularly well suited for the species because they are transition zones between deciduous and rain forests. The forest is low and considerable understory is present.

As to be expected, Cole (1906) found the species uncommon at Chichén Itzá and Gaumer (Boucard, 1883) considered it a very rare species throughout Yucatán.

WEIGHT. Six mature males weighed 32.4, 32.6, 32.8, 33.9, 34.0, and 34.2 grams; one immature male 29.4 grams.

DENDROCOPUS SCALARIS PARVUS (Cabot).
Ladder-backed Woodpecker. Shipix.

Picus parvus Cabot, Boston Jour. Nat. Hist., 5:92, 1845. (Ticúl, Yucatán.)

RANGE. A highly polymorphic species which ranges from the southwestern United States through Mexico to British Honduras and Honduras; the race endemic to the Yucatán Peninsula, including Islas Cozumel (Salvin, 1888) and Holbox (sight record); doubtfully distinct *D. s. ridgwayi* in southeastern Veracruz and Tabasco; *D. s. leucoptilurus* in British Honduras.

SPECIMENS. Quintana Roo—Carrillo Puerto, 2♂, June 22, 1950; Tabi, 1♀, Mar. 8, 1♂, 1♀, Mar. 9, 1♂, Mar. 10, 1949; Kilómetro Cincuenta, 1♀, July 29, 1950; Ch'ich', 1♂, May 6, 1950; Laguna Chichancanab, 1♂, Mar. 10, 1951; Kantunil-Kín, 1♂, Apr. 22, 1949. Yucatán—San Diego, 1♂, Mar. 21, 1950; Dzidzantún, 1♀, Dec. 8, 1951; Santa Clara, 2♂, May 16, 1♂, July 2, 1♂, Aug. 2, 1952. Campeche—Pueblo Nuevo, 1♂, Sept. 22, 1950; Champotón, 3♂, Jan. 23, 1951.

HABITAT. Ranges from the coastal scrub to moderately high deciduous forest, and occasionally into the zone of rain forest, where there are clearings.

REMARKS. The species is most common on the arid northern tip of the Peninsula and becomes progressively less common southward, although Traylor (1941) found it in clearings as far south as Pacaytun.

It has been recorded from Isla Cozumel by Salvin (1888) who found it unseparable from the mainland population. It is undoubtedly very uncommon there since there has been no additional record since then.

A single bird was seen in a *cocal* on Isla Holbox in December, 1950. A number of nest holes were found in the palms and it is presumed that the species is present in fair numbers, although none was observed by us.

Brodkorb (1943a) thought a single specimen from Palizada to be intermediate between *D. s. parvus* and *D. s. ridgwayi*, but nearer the latter. In view of the fact that *D. s. ridgwayi* is only slightly distinct from *D. s. parvus* at best, and is considered doubtfully valid by Peters (1948), it appears better to include this record under *D. s. parvus*. It must be a purely subjective matter whether to place a specimen, which is intermediate between two very similar forms, in one race rather than in the other.

BREEDING. Several specimens taken from March 8 to May 16 were breeding.

WEIGHT. Six mature males weighed 23.4, 24.2, 25.6, 26.5, 26.7, and 27.3 grams; an immature male 22.6; and two females 25.3 and 29.4 grams.

PHLOEOCEASTES GUATEMALENSIS GUATEMALENSIS (Hartlaub).
Pale-billed Woodpecker. Carpintero Grande. Colonté.

Picus guatemalensis Hartlaub, Rev. Zool., 7:214, 1844. (Guatemala.)

RANGE. The species ranges from Mexico to Panama; the race from the Isthmus of Tehuantepec south to Panama; on the Peninsula in Yucatán (Boucard, 1883), Campeche, and Quintana Roo; *P. g. regius* from Veracruz and northeastern Oaxaca to Tamaulipas, and *P. g. nelsoni* from western Oaxaca to Jalisco.

SPECIMENS. Quintana Roo—Chetumal, 1♀, Nov. 16, 1♀, Nov. 26, 1♂, Nov. 27, 1♀, Dec. 8, 1♀, Dec. 20, 1948; Bacalar, 1♂, Oct. 28, 1952; 46 km. W. Chetumal, 1♀, Feb. 12, 1949; Laguna Chacabacab, 1♂, May 13, 1949; Agua Blanca, 1♀, June 2, 1949; Carrillo Puerto, 1♂, Apr. 15, 1♂, June 17, 1950; Tabi, 2♀, Mar. 12, 1949, 1♂, Mar. 26, 1953; Xcan, 1♂, 1♀, Apr. 19, 1952; 15 km. NW. Kantunil-Kín, 1♀, Dec. 14, 1950. Campeche—2 km. N. Aguada Seca, 1♂, 1♀, Feb. 8, 1951. 1♂, Feb. 9, 1951.

HABITAT. In wooded regions throughout the Peninsula, with the exception of low deciduous forest, but most common in the zone of rain forest.

BREEDING. This species has an unusually extended reproductive season. Breeding specimens have been taken from December 8 through June 2. Data for the remainder of the year are lacking, but the fact that the species has been found breeding for seven months of the year, including the winter, strongly suggests that it may breed continuously. Although the data are not sufficient to indicate the presence of a peak period, they are adequate to be certain that the apparent extended reproductive season is not merely caused by an unusually late, or early, breeder. The ovaries of birds taken on December 8 and 14 contained well developed ova, as did those of some of the females collected in other months.

WEIGHT. Three mature males weighed 213.4, 216.0, and 220.9, and five mature females 192.0, 209.0, 213.7, 215.0, and 222.0 grams. A single immature female weighed 178.8 grams.

Family DENDROCOLAPTIDAE

DENDROCINCLA ANABATINA ANABATINA Sclater.
Tawny-winged Woodcreeper.

Dendrocincla anabatina Sclater, Zool. Soc. London, Proc., 27:54, 1859. (Omoa, Honduras.)

RANGE. The species occurs from Veracruz and Oaxaca south to Panama; the race for the entire range, with the exception of most of the Yucatán Peninsula, which is occupied by *D. a. typhla*; on the Peninsula in extreme southern Quintana Roo and Campeche.

SPECIMENS. Quintana Roo—24 km. NW. Xtocomo, 2♂, 1♀, Feb. 23, 1♂, Feb. 25, 1951; Ucum, 1♀, Feb. 25, 1952. Campeche—2 km. N. Aguada Seca, 1♂, 1♀, Feb. 5, 1♀, Feb. 8, 1951.

HABITAT. Rain forest.

REMARKS. Specimens from the base of the Peninsula are intermediate between the nominate race and *D. a. typhla*, but on the whole are nearer to the former. The bird from Ucum is definitely closer to *D. a. anabatina*, although specimens from nearby localities are equally close to *D. a. typhla*.

BREEDING. A specimen taken on February 23 had slightly enlarged testes.

WEIGHT. Four males weighed 35.2, 35.4, 35.4, and 42.4 grams; three females 30.0, 30.2, and 31.7 grams.

DENDROCINCLA ANABATINA TYPHLA Oberholser.

Dendrocincla typhla Oberholser, Acad. Nat. Sci. Phila., Proc., 56:452, 1904. (Puerto Morelos, Yucatán [= Quintana Roo].)

RANGE. The race is endemic to Yucatán (Cole, 1906), Quintana Roo, and Campeche (Ridgway, 1911), with the exception of the southernmost portions of the latter two states.

SPECIMENS. Quintana Roo—Chetumal, 1♀, Jan. 22, 1949; 46 km. W. Chetumal, 1♂, Feb. 11, 1♀, Feb. 12, 1♂, Feb. 14, 1♂, Feb. 18, 1949; Carrillo Puerto, 1♀, Mar. 21, 1949; 5 km. NW. Vigía Chico, 1♂, Apr. 8, 1949; Tabi, 1♀, Apr. 4, 1953; Xcan, 1♂, Apr. 26, 1949.

HABITAT. Rain forest and heavy deciduous forest.

REMARKS. The most distinct examples of this pallid race are found in the deciduous forest, where it is rare.

BREEDING. The male collected on April 8 was in full breeding status.

WEIGHT. The breeding male weighed 41.0 grams; three nonbreeding males 35.4, 36.5, and 37.9 grams; three nonbreeding females 28.8, 32.8, and 34.1 grams.

DENDROCINCLA HOMOCHROA HOMOCHROA (Sclater). Ruddy Woodcreeper.

Dendromanes homochrous Sclater, Zool. Soc. London, Proc., 27:382, 1859. (Teotalcingo, Oaxaca.)

RANGE. The species occurs from southern Mexico to western Venezuela; the race from Oaxaca south to Guatemala and Honduras; on the Peninsula in Yucatán (Boucard, 1883), Quintana Roo, and Campeche.

SPECIMENS. Quintana Roo—Chetumal, 1♂, Dec. 10, 1948; 24 km. NW. Xtocomo, 1♀, Feb. 23, 1♂, Feb. 26, 1951; Laguna Chacanbacab, 1♀, May 20, 1949; Carrillo Puerto, 1♂, Mar. 4, 1949, 1♂, 1♀, June 14, 1950; Tabi, 1♂, Mar. 30, 1♀, Mar. 31,

1953; 15 km. NW. Kantunil-Kín, 1♀, Jan. 1, 1951. Campeche—Champotón, 1♂, 1♀, Jan. 24, 1951; Ichek, 1♂, Dec. 24, 1949.

HABITAT. Rain forest and high deciduous forest; much less common in the latter.

REMARKS. The species was supposedly collected by Gaumer on Isla Mujeres and Isla Cozumel (Sclater, 1890), but no other collector has found it there. Both islands appear ecologically unsuitable for this bird and it seems that this may be another case of incorrectly labeled specimens.

BREEDING. A bird collected on May 20 had an enlarged ovary.

WEIGHT. Four males weighed 37.6, 39.2, 42.0, and 43.2; two females 33.6 and 33.8 grams.

SITTASOMUS GRISEICAPILLUS GRACILEUS Bangs and Peters.
Olivaceous Woodcreeper. Takaj-ché.

Sittasomus griseicapillus gracileus Bangs and Peters, Harvard, Mus. Comp. Zool., Bull., 68:392, 1928. (Chichén Itzá, Yucatán.)

RANGE. The species occurs from Mexico to Argentina; the race confined to the Yucatán Peninsula and adjacent parts of Tabasco, coastal British Honduras, and probably northern Petén, *S. g. sylvioides* from Veracruz to Costa Rica.

SPECIMENS. Quintana Roo—Chetumal, 1♂, Nov. 26, 1948; Ucum, 1♂, Feb. 25, 1952; 46 km. W. Chetumal, 1♀, Feb. 14, 1♀, Feb. 17, 1949; 24 km. NW. Xtocomo, 1♀, Feb. 25, 1♂, Feb. 26, 1♂, Feb. 27, 1951; Tabi, 1♀, 1♂, Mar. 17, 1949; Carrillo Puerto, 1♀, Mar. 27, 1949, 1♂, June 6, 2♀, June 12, 1♂, June 19, 1950; Xcan, 1♂, Apr. 26, 1♂, Apr. 27, 1949, 1♀, Mar. 21, 1950; Kantunil-Kín, 1♂, Apr. 22, 1949. Yucatán—San Diego, 1♂, Mar. 18, 1950. Campeche—Ichek, 1♂, May 23, 1952; 2 km. N. Aguada Seca, 1♂, Feb. 10, 1951.

HABITAT. From rain forest to moderately high deciduous forest, but most common in the former.

REMARKS. Although all who have had occasion to study *S. g. gracileus* agree that it is smaller and paler than *S. g. sylvioides*, no one appears to have amplified the original description and given comparative measurements for the two forms.

In addition to the above series of *S. g. gracileus*, I have measured the type, a topotype, two specimens from southern Quintana Roo, and a single specimen from Manatee District, British Honduras, as well as a number of specimens of *S. g. sylvioides* from Mexico and the interior of British Honduras. The results, which are presented below, indicate that, for a given sex, the wing and tail are significantly ($P < .001$) smaller in *S. g. gracileus* and that there is no significant difference in the length of the culmen.

<i>S. g. gracileus</i>					<i>S. g. sylvioides</i>				
Chare.	Sex	Mean	σ_m	N	Chare.	Sex	Mean	σ_m	N
Wing	♂	73.68mm.	± 0.66	13	Wing	♂	79.57mm.	± 0.35	7
	♀	66.55	± 0.39	8		♀	73.33	± 1.58	3
Tail	♂	69.50	± 0.22	14	Tail	♂	75.62	± 0.23	8
	♀	64.00	± 0.19	8		♀	70.00	± 0.66	4
Culmen	♂	16.87	± 0.04	12	Culmen	♂	17.28	± 0.12	7
	♀	15.56	± 0.07	8		♀	16.00	± 0.00	2

BREEDING. Breeding specimens have been taken from March 17 to May 23.

WEIGHT. Seven males weighed 9.0, 10.8, 10.9, 11.0, 11.5, 11.8, and 12.1 grams; four females, 8.6, 8.9, 9.1, and 10.4 grams.

DENDROCOLAPTES CERTHIA SANCTI-THOMAE (Lafresnaye).
Barred Woodcreeper.

Dendrocops sancti-thomae Lafresnaye, Rev. Mag. Zool., 4:466, 1852. (Santo Tomás, Honduras [= Guatemala].)

RANGE. The species ranges from southern Mexico to Bolivia; the race from Veracruz, southern Campeche, and southern Quintana Roo to Nicaragua; *D. c. legtersi* contiguous in central Quintana Roo.

SPECIMENS. Quintana Roo—46 km. W. Chetumal, 1♀, Feb. 14, 1♀, Feb. 18, 1949. Campeche—2 km. N. Aguada Seca, 1♀, Feb. 7, 1951.

HABITAT. Heavy rain forest.

REMARKS. The species is comparatively uncommon on the Peninsula. Previously it had been recorded only from Pacaytun (Traylor, 1941) and Apazote (Ridgway, 1911). I have examined the five specimens which were collected in those two localities, in addition to the material in this collection, and find that all of the birds from southern Quintana Roo and Campeche exhibit an approach toward *D. c. legtersi*, but they are much closer to *D. c. sancti-thomae*.

WEIGHT. The three females weighed 54.3, 55.9, and 61.3 grams.

DENDROCOLAPTES CERTHIA LEGTERSI Paynter.

Dendrocolaptes certhia legtersi Paynter, Yale Peabody Mus., Postilla, No. 18:1, 1954. (Carrillo Puerto, Quintana Roo.)

RANGE. Known only from central Quintana Roo.

SPECIMENS. Quintana Roo—Carrillo Puerto, 1♂, Mar. 4, 1♂, Mar. 21, 1949, 1♂, June 6, 1♂, June 20, 1950; Tabi, 1♀, Apr. 4, 1953.

HABITAT. Low rain forest.

REMARKS. Although Carrillo Puerto is the northernmost known range of the species on the Peninsula, I have little doubt that in time it will be found in the rain forest of northern Quintana Roo.

WEIGHT. Two males weighed 52.7 and 60.8 grams.

XIPHORHYNCHUS FLAVIGASTER YUCATANENSIS Ridgway.

Ivory-billed Woodcreeper. Takaj-ché.

Xiphorhynchus flavigaster yucatanensis Ridgway, Biol. Soc. Wash., Proc., 22:73, 1909. (Temax, Yucatán.)

RANGE. The species is distributed from northern Mexico to Costa Rica; the race endemic to the Yucatán Peninsula; *X. f. eburneiostris* contiguous, ranging from southern Veracruz and Mexico through eastern Oaxaca to Costa Rica.

SPECIMENS. Quintana Roo—Chetumal, 1♂, Dec. 7, 1948; 46 km. W. Chetumal, 1♀, Feb. 11, 1♀, Feb. 14, 1♀, Feb. 16, 1♂, Feb. 18, 1949; Bacalar, 1♀, Feb. 9, 1♂, Feb. 17, 1952; Ucum, 1♀, Feb. 25, 1952; 24 km. NW. Xtocomo, 1♂, Feb. 25, 1950; Laguna Chacabacab, 1♀, May 15, 1♀, May 18, 1949; Agua Blanca, 1♀, June 5, 1949; Carrillo Puerto, 1♂, 1♀, Mar. 4, 1♂, Mar. 27, 1949, 1♀, Apr. 14, 1♂, 1♀, June 9, 1♂, June 17, 1950; Vigía Chico, 1♀, Mar. 31, 1949; Tabi, 1♂, Mar. 15, 1♀, Mar. 18, 1949, 1♂, Mar. 27, 1♀, Mar. 31, 1♂, Apr. 13, 1953; Xcan, 1♂, Apr. 26, 1949; Kantunil-Kín, 1♀, Apr. 23, 1949; 15 km. NW. Kantunil-Kín, 1♀, Dec. 14, 1950. Yucatán—Xocempich, 1♀, Oct. 3, 1950; Celestún, 1♂, Jan. 12, 1951. Campeche—Ichek, 1♂, May 23, 1♀, May 24, 1♂, Nov. 26, 1952; Champotón, 1♂, Jan. 26, 1951; 2 km. N. Aguada Seca, 1♀, Feb. 6, 1♂, 1♀, Feb. 7, 1♀, Feb. 8, 1951.

HABITAT. Found in forested areas throughout the Peninsula; least common in low deciduous forest and high rain forest.

REMARKS. Specimens from southern Campeche and southern Quintana Roo show an approach to *X. f. eburneiostris*, but they are, however, much nearer to *X. f. yucatanensis*.

BREEDING. Indications of breeding have been observed in specimens collected between March 27 and June 5. There is no information available for specimens taken later in the summer.

WEIGHT. Nine males weighed from 43.6 to 52.6 grams with a mean of

47.21 \pm 0.88; twelve females ranged from 35.0 to 44.1 grams with a mean of 39.68 \pm 1.77 grams.

In Chiapas I collected two males and a female of *X. f. eburneirostris* which weighed 50.0, 60.5, and 55.7 grams, respectively. The data are scant but do suggest that a difference in weight probably exists between the two races.

LEPIDOCOLAPTES SOULEYETHI INSIGNIS (Nelson).
Streak-headed Woodcreeper.

Picolaptes compressus insignis Nelson, Auk, 14:54, 1897. (Otatitlan, Veracruz.)

RANGE. The species occurs from Guerrero and Veracruz to northern Brazil and Peru; the race from Veracruz and Oaxaca to northern Honduras; on the Peninsula known only from southwestern Campeche (Traylor, 1941).

REMARKS. The species is included within the avifauna of the Peninsula on the basis of a single specimen collected at Pacaytun (Traylor, 1941).

Family FURNARIIDAE

SYNALLAXIS ERYTHROTHORAX ERYTHROTHORAX Sclater.
Rufous-breasted Spinetail.

Synallaxis erythrothorax Sclater, Zool. Soc. London, Proc., 23:75, 1855. (Cobán, Guatemala, and Honduras.)

RANGE. The species ranges from Mexico to El Salvador; the race from eastern Tabasco through the Yucatán Peninsula, northern Guatemala, British Honduras, and northwestern Honduras; on the Peninsula in Campeche (Traylor, 1941), Yucatán (Boucard, 1883) and Quintana Roo; *S. e. furtiva* in Veracruz, probably Oaxaca, and all but extreme eastern Tabasco; *S. e. pacifica* on the Pacific slope of Chiapas, Guatemala, and El Salvador.

SPECIMENS. Quintana Roo—Agua Blanca, 1♀, June 2, 1♀, June 5, 1♂, June 6, 1949; Xcan, 1♂, 1♀, Apr. 11, 1952; 15 km. NW. Kantunil-Kín, 1♂, Dec. 13, 1950.

HABITAT. Thickets within the rain forest zone; once recorded from area of deciduous forest (Cole, 1906).

REMARKS. Although Gaumer (Boucard, 1883) reported the species common in eastern Yucatán, I have found it rare and local.

Brodkorb (1943a) reported three of four specimens from Tenosique, Tabasco, to be intermediate between *S. e. erythrothorax* and *S. e. furtiva* but closer to the latter, and the fourth specimen to be typical of *S. e. furtiva*. I have seen two specimens from Allende, Tabasco, however, which are indistinguishable from the nominate race. Presumably intergradation

with *S. e. furtiva* occurs within this area. Therefore, the range of *S. e. erythrothorax* should be emended to include extreme eastern Tabasco.

BREEDING. The male from Agua Blanca had enlarged testes.

WEIGHT. Two males and a female weighed 16.4, 17.5, and 15.9 grams.

XENOPS MINUTUS MEXICANUS Sclater.

Plain Xenops. Jana'-sinik.

Xenops mexicanus Sclater, Zool. Soc. London, Proc., 24:289, 1856(-1857).
(Córdoba, Veracruz.)

RANGE. The species is found from southern Mexico to southern Brazil; the race from Veracruz and Oaxaca to Honduras; on the Peninsula in Campeche and Quintana Roo.

SPECIMENS. Quintana Roo—Agua Blanca, 1 ♀, June 2, 1949; 24 km. NW Xtocomo, 1 ♂, Feb. 26, 1951; Carrillo Puerto, 1 ♂, June 6, 1 ♀, June 17, 1 ♂, June 21, 1950; Xcan, 1 ♂, Apr. 28, 1950. Campeche—2 km. N. Aguada Seca, 1 ♂, Feb. 10, 1950; Pueblo Nuevo, 1 ♀, Sept. 22, 1950.

HABITAT. Rain forest.

REMARKS. Ridgway (1911) included Yucatán within the range of the species, but this record was based on a specimen from La Vega, which is in the northeastern corner of Quintana Roo.

The three specimens from Carrillo Puerto are notably pale below and rather light dorsally. They are lighter than any specimens of the race which I have seen.

Subspecific differentiation is to be expected in a rain forest species which penetrates so far north on the Peninsula, and particularly in this area of transition between the wet and dry forests. The three specimens, however, were taken in June and are in moderately worn plumage. Seasonal change in color is evident in the species and might account for the unusually pale coloration in the Carrillo Puerto material, although I have seen no specimens from other areas which are so pale, even though equally worn. It is probable that specimens in fresh plumage from Carrillo Puerto will also be found to be pale and distinct from *X. m. mexicanus*.

BREEDING. The male taken in late April at Xcan was breeding and the female taken in June at Agua Blanca had a slightly enlarged ovary. There are no data for the remaining June specimens.

WEIGHT. Three males weighed 9.9, 11.2, and 11.5; a female 9.3 grams.

SCLERURUS GUATEMALENSIS GUATEMALENSIS (Hartlaub).
Scaly-throated Leaf-scraper.

Tinactor guatemalensis Hartlaub, Rev. Zool., 7:370, 1844. (Guatemala.)

RANGE. The species ranges from southern Mexico to Ecuador; the race from Veracruz, Tabasco, and Chiapas south to Panama; one record from southern Quintana Roo.

SPECIMEN. Quintana Roo—Laguna Chacanbacab, 1♂, May 13, 1949.

HABITAT. Heavy rain forest, with relatively clear understory.

REMARKS. The species is rare in the northern part of its range. It had not been found previously on the Peninsula but, although only the one bird was seen, its presence in the heavy forest at the base of the Peninsula is not unexpected since it has been recorded from Petén (Van Tyne, 1935).

WEIGHT. The specimen weighed 33.5 grams, agreeing closely with two males collected by Van Tyne (1935) which weighed 32.7 and 33 grams.

Family FORMICARIIDAE

THAMNOPHILUS DOLIATUS YUCATANENSIS Ridgway.
Barred Antshrike. Balan-ch'ich'.

Thamnophilus doliatus yucatanensis Ridgway, Biol. Soc. Wash., Proc., 21:193, 1908. (Temax, Yucatán.)

RANGE. The species is present from eastern Mexico to northern Argentina; the race endemic to the Yucatán Peninsula, and adjacent Petén; doubtfully present on Isla Cozumel; *T. d. intermedius* from Tamaulipas through eastern and southern Mexico and southward to Costa Rica.

SPECIMENS. Quintana Roo—Bacalar, 1♀, Feb. 17, 1♀, Oct. 28, 1952; Estero Franco, 1♂, 1♀, Jan. 28, 1949; Carrillo Puerto, 1♂, 1♀, June 8, 1950; Tabi, 1♂, Mar. 8, 1♀, Mar. 11, 1♂, 2♀, Mar. 14, 1950, 1♀, Mar. 24, 1♂, Mar. 27, 1953; Ch'ich', 1♀, May 8, 1♂, May 11, 1950; Xcan, 1♂, Mar. 21, 1950; 15 km. NW. Kantunil-Kín, 1♂, Dec. 13, 1950, 1♂, Jan. 1, 1951. Yucatán—Xocempich, 1♂, June 19, 1♂, Nov. 19, 1952; Santa Clara, 2♀, Sept. 1, 1950; Sucopó, 1♂, Apr. 21, 1949; Mérida, 1♂, Oct. 5, 1950; Sisal, 1♂, Jan. 9, 1951. Campeche—2 km. N. Aguada Seca, 1♂, Feb. 10, 1951.

HABITAT. Scrub and second growth throughout the Peninsula but most often in the zone of rain forest.

REMARKS. The species is only locally common on the Peninsula, apparently because it exists almost solely in thickets which occur naturally. It is sometimes found in second growth, such as occurs in abandoned *milpas*, but only if these conditions are created adjacent to already existing naturally favorable habitats. In other words, it seems that this species is not

able to seek out, or at least does not utilize, temporarily favorable niches, unless they are near at hand.

Slater (1890) listed a single specimen collected by Gaumer on Isla Cozumel. There exists no other record from the island. Its presence there requires verification.

WEIGHT. The weights of eight males ranged from 21.4 to 27.8 grams, with a mean of 24.91 ± 0.71 grams. Three females weighed 22.8, 26.3, and 27.0 grams.

DYSITHAMNUS MENTALIS SEPTENTRIONALIS Ridgway.
Plain Antvireo.

Dysithamnus mentalis septentrionalis Ridgway, Biol. Soc. Wash., Proc., 21:193, 1908. (Choctum, Verapaz, Guatemala.)

RANGE. The species ranges from extreme southern Mexico to northern Argentina; the race from Mexico to Panama; in Mexico recorded only from Campeche (Traylor, 1941).

HABITAT. Known only from the zone of heavy rain forest.

REMARKS. At Pacaytun, Traylor (1941) collected two specimens of this rare northern representative of a common South American species.

MICRORHOPIAS QUIXENSIS BOUCARDI (Slater).
Dot-winged Antwren.

Formicivora boucardi Slater, Zool. Soc. London, Proc., 26:300, 1858. (Acatepec, Oaxaca.)

RANGE. The species occurs from southern Mexico to Amazonia; the race from Veracruz and Oaxaca to northwestern Honduras; on the Peninsula known only from southern Quintana Roo.

SPECIMENS. Quintana Roo—Laguna Chacanbacab, 1♂, May 17, 1940; 46 km. W. Chetumal, 1♀, Feb. 16, 1949, 1♂, Aug. 20, 1950.

HABITAT. Thickets bordering heavy rain forest.

REMARKS. This species was not recorded from the Peninsula previously. It appears to be uncommon; the three specimens collected were the only ones seen.

BREEDING. The specimen taken in mid-February had an enlarged ovary.

WEIGHT. A male and a female weighed 8.2 and 7.7 grams, respectively.

CERCOMACRA TYRANNINA CREPERA Bangs.
Dusky Antbird

Cercomacra crepera Bangs, Auk, 18:365, 1901. (Divala, Chiriquí, Panama.)

RANGE. The species is distributed from southern Mexico to Ecuador and Brazil; the race from Veracruz and Chiapas to Panama; on the Peninsula in Campeche (Traylor, 1941) and Quintana Roo.

SPECIMENS. Laguna Chacanbacab, 1♂, May 13, 1949; 46 km. W. Chetumal, 1♂, Feb. 17, 1949; 12 km. W. Bacalar, 1♀, Apr. —, 1950; Ch'ich', 1♀, May 6, 1950.

HABITAT. Thickets bordering rain forest and probably occasionally in those of high deciduous forest.

REMARKS. Dusky Antbirds are very local on the Peninsula. Traylor (1941) found them fairly common in one locality at Pacaytun and nowhere else, although there was no apparent difference in habitats.

The presence of this rain forest species at Ch'ich' is notable. The specimen was collected by Legters and I know nothing of the habitat in which it was taken or of the presence of other individuals. The region is intermediate between rain and deciduous forest and unlike the forest at the base of the Peninsula where Dusky Antbirds would be more expected.

BREEDING. The male from Laguna Chacanbacab had enlarged gonads.

WEIGHT. Two males weighed 14.1 and 15.0 grams.

FORMICARIUS ANALIS PALLIDUS (Lawrence).
Black-faced Antthrush. Xbech'-lu'um.

Furnarius pallidus Lawrence, New York Acad. Sci., Ann., 2:288, 1882. (Yucatán.)

RANGE. The species occurs from southern Mexico to Amazonia; the race endemic to the northern three-quarters of the Yucatán Peninsula; *F. a. intermedius* from southern Campeche and Quintana Roo to Honduras, and undoubtedly Petén; *F. a. moniliger* from Tabasco and Chiapas north to Veracruz.

SPECIMENS. Quintana Roo—24 km. NW. Xtocomo, 1♂, Feb. 26, 1950; 5 km. NW. Vigía Chico, 1♀, Apr. 9, 1949; Carrillo Puerto, 1♂, 1♀, Mar. 21, 1949, 2♂, June 17, 1♀, June 19, 1♂, June 22, 1950; Xcan, 1♂, Apr. 25, 1♂, Apr. 27, 1949; 15 km. NW. Kantunil-Kín, 1♂, Dec. 31, 1950. Campeche—Champton, 1♂, Jan. 26, 1951.

HABITAT. Rain forest and high deciduous forest.

REMARKS. I have never seen the species in Yucatán, but because of the dearth of suitable habitats in that state, suspect that the type specimen came from the high forest in northwestern Yucatán, probably in the vicinity of Tizimín.

All of these specimens are very pale ventrally, often with pure white abdomens, and are totally lacking any rufescent tone dorsally.

BREEDING. Birds taken on March 21 and April 9 had slightly enlarged gonads.

WEIGHT. Five males weighed 58.2, 60.0, 64.8, 65.0, and 66.3 grams; two females 60.3 and 66.9 grams.

FORMICARIUS ANALIS INTERMEDIUS Ridgway.

Formicarius moniliger intermedius Ridgway, Biol. Soc. Wash., Proc., 21:194, 1908. (Manatee Lagoon, British Honduras.)

RANGE. The race is found from southern Quintana Roo and Campeche through British Honduras, and undoubtedly Petén, to Honduras.

SPECIMENS. Quintana Roo—Laguna Chacanbacab, 1 ♀, May 13, 1 ♂, May 15, 1949; Bacalar, 1 ♂, Feb. 15, 1 ♂, Feb. 17, 1952; Ucum, 1 ♀, Feb. 25, 1952; 25 km. W. Chetumal, 1 ♂, Apr. 1, 1950. Campeche—2 km. N. Aguada Seca, 1 ♀, Feb. 9, 1951.

HABITAT. Rain forest.

REMARKS. Within this series there is no specimen which is typical of *F. a. intermedius*, although all are nearer to that race than to *F. a. pallidus*, in that dorsally they are rufescent to some degree and ventrally they are fairly dark.

I have examined the specimen collected by Peters (1913) at Xcopen, on the Río Hondo, and find it indistinguishable from topotypic material of *F. a. intermedius*. The fact that none of my series is so distinct is not surprising, since all of the specimens come from farther north on the Peninsula and from forest less wet than that along the river.

Although I have not seen the specimens collected by Traylor (1941) at Matamoros and Pacaytun, I think that without doubt they can be referred to *F. a. intermedius* since he stated (*op. cit.*, p. 212) that they have "practically no rufous on the back." With a good series of *F. a. pallidus* now available it is evident that the race has no rufous whatsoever on the back, and that any rufous would be an approach toward *F. a. intermedius*. With only a knowledge of the habitats and locations of the two collecting stations one would expect to find populations which approach *F. a. intermedius*. The same may be said for birds from northern Petén which Van Tyne (1935) tentatively assigned to *F. a. pallidus*.

BREEDING. The two specimens taken in mid-May had moderately enlarged gonads.

WEIGHT. A male and two females weighed 65.6, 55.5, and 65.5 grams, respectively.

Family COTINGIDAE

ATTILA SPADICEUS FLAMMULATUS Lafresnaye.
Bright-rumped Attila.

Attila flammulatus Lafresnaye, Rev. Zool., 11:47, 1848. (Veracruz.)

RANGE. The species occurs from Mexico to Brazil; the race from Veracruz and Puebla southward through eastern Mexico, including southern Quintana Roo and Campeche, to Honduras; one record from Yucatán; *A. s. gaumeri* contiguous in the northern portion of the Peninsula.

SPECIMENS. Quintana Roo—Chetumal, 1♂, May 27, 1949; Estero Franco, 1♂, Jan 27, 1949; Agua Blanca, 1 juv., June 2, 1949; 24 km. NW. Xtocomo, 1♂, Feb. 25, 2♀, Feb. 26, 1951; Km. 21, Chetumal-Bacalar Rd., 1♂, May 22, 1952. Campeche—20 km. N. Escárcega, 1♂, Mar. 3, 1951. Yucatán—Xocempich, 1♀, Apr. 17, 1952.

HABITAT. Rain forest; one record, probably referable to this race, from deciduous forest.

REMARKS. Within this entire series there is not a single bird which may be said to be typical of *A. s. flammulatus*. There is a wide range of heterogeneity, even between specimens from the same locality, with all of the birds possessing some of the characters of both *A. s. flammulatus* and *A. s. gaumeri* to various degrees. It is strictly a subjective matter whether to call these specimens *A. s. flammulatus* approaching *A. s. gaumeri* or *A. s. gaumeri* approaching *A. s. flammulatus*. The nomenclature in either instance conceals the dynamic aspect of the condition.

Traylor (1941) preferred to place his specimens from southern Campeche in *A. s. gaumeri*, but I believe that this race, which is once again the manifestation of a rain forest species' response to aridity, should be restricted to the drier portions of the Peninsula.

A bird taken at Xocempich on April 17 is of especial interest. It is heavily and darkly marked on the throat, the breast is well washed with yellow, the crissum and rump are richly colored, and the back is darker than the other specimens from the northern part of the Peninsula. It is obviously close to *A. s. flammulatus*. While it may be an aberrant example of *A. s. gaumeri*, it appears more probable that it belongs to the contiguous race and had wandered to Yucatán. Unfortunately, no notice was taken of the condition of the gonad.

The species is relatively common within the forest, where it often perches near a trail in the manner of a flycatcher, but it is quiet and difficult to collect.

BREEDING. The only breeding record for this race is the male with very enlarged testes taken at Chetumal on May 27. The juvenal collected at Agua Blanca on June 2 was able to fly, but its tail is only half unsheathed, indicating that it had fledged only a few days earlier.

WEIGHT. Three males weighed 35.6, 40.5, and 42.6 grams; two females 35.2 and 36.1 grams.

ATTILA SPADICEUS GAUMERI Salvin and Godman.

Attila gaumeri Salvin and Godman, Biol. Centr.-Am., Aves, 2:134, 1891. (Tizimín, Yucatán.)

RANGE. The race is confined to Yucatán, northern and possibly eastern coastal Quintana Roo, and northern Campeche; very doubtfully present on Islas Holbox and Mujeres, Quintana Roo.

SPECIMENS. Quintana Roo—Xcalac, 1?, Feb. 2, 1949; 15 km. NW. Kantunil-Kín, 1♂, Dec. 14, 1♂, Dec. 30, 1♂, Dec. 31, 1950; Xcan, 1♀, Apr. 27, 1949. Yucatán—20 km. E. Sucopó, 1♀, Apr. 22, 1949. Campeche—Ichek, 1♂, July 20, 1950.

HABITAT. Deciduous forest of moderate height to low rain forest.

REMARKS. This pale race is uncommon throughout its range. The specimen from Xcalac is typical of the form, even though it was collected far south on the Peninsula. It may indicate that the race extends along the entire arid coastal belt of Quintana Roo, a condition similar to that suggested as possibly occurring in *Ortalis vetula pallidiventris*, or the bird may have been merely a winter visitant.

Salvin (1889) recorded specimens taken by Gaumer on Islas Holbox and Mujeres, and remarked that they were more similar to the mainland form than to that from Cozumel. I strongly suspect that they are mislabeled mainland specimens because both islands appear completely unsuited for the species, and also because no other collector has found it there.

BREEDING. A female with a slightly enlarged ovary on April 22 and one with a fully developed egg on April 27 are the only breeding records.

WEIGHT. Three males weighed 35.2, 42.2, and 44.1; a female 36.5 grams.

ATTILA SPADICEUS COZUMELAE Ridgway.

Attila cozumelae Ridgway, Desc. New Spp. Birds from Cozumel Id., p. 3, 1885. (Isla Cozumel, Quintana Roo.)

RANGE. Endemic to Isla Cozumel, Quintana Roo.

SPECIMENS. Quintana Roo—Isla Cozumel, 1?, Jan. 7, 1♂, Jan. 10, 1949.

HABITAT. Deciduous forest.

WEIGHT. The male weighed 38.0 grams and the unsexed bird 40.9 grams.

PACHYRAMPHUS MAJOR ITZENSIS Nelson.
Gray-collared Becard.

Pachyramphus major itzensis Nelson, Biol. Soc. Wash., Proc., 14:173, 1901. (Chichén Itzá, Yucatán.)

RANGE. The species is distributed from Tamaulipas and Sinaloa to Nicaragua; the race endemic to the Yucatán Peninsula, and possibly British Honduras; *P. m. australis* from Tabasco and Chiapas southward.

SPECIMENS. Quintana Roo—Bacalar, 1 ♂, Feb. 19, 1952; 46 km. W. Chetumal, 1 ♂, Aug. 21, 1950. Yucatán—Xocempich, 1 ♂, Sept. 28, 1950, 1 ♀, July 12, 1952. Campeche—Ichek, 1 ♂, July 28, 1 ♂, Sept. 25, 1 ♂, Sept. 26, 1950, 1 ♂, Apr. 22, 1 ♂, May 24, 1952.

HABITAT. Deciduous forest; very occasionally in second growth within the zone of rain forest.

REMARKS. *Pachyramphus major* is the most uncommon of the Cotingidae occurring on the Peninsula.

The specimen from 46 kilometers west of Chetumal is very close to *P. m. australis*. When more specimens have been collected in the southern portion of the Peninsula it will probably be revealed that *P. m. itzensis* is confined to the northern, more arid, region although Hellmayr (1929) has included British Honduras within the range, apparently on the basis of a single specimen collected by Peck (Bangs and Peck, 1908) in the Toledo District. I have examined this specimen, which is a female, although labeled a male and considered to be a young male by Bangs and Peck (1908), and I am unable to assign it to either race with confidence.

BREEDING. The only specimen for which there is information is the female, collected on July 12, which contained a well developed egg.

PLATYPSARIS AGLAIAE SUMICHRASTI Nelson.

Rose-throated Becard.

Platypsaris aglaiae sumichrasti Nelson, Auk, 14:52, 1897. (Tlacotalpán, Veracruz.)

RANGE. The species occurs from the extreme southern United States to Costa Rica; the race from southern Veracruz through southern Campeche and Quintana Roo to El Salvador; *P. a. yucatanensis* contiguous in the northern part of the Peninsula.

SPECIMENS. Quintana Roo—Chetumal, 1 ♂, Dec. 16, 1948, 1 ♀, Feb. 26, 1949. Campeche—2 km. N. Aguada Seca, 1 ♂, Feb. 5, 1 ♂, Feb. 9, 1951.

HABITAT. Rain forest edges.

REMARKS. These four specimens are not typical of the race, but are very dark and much closer to *P. a. sumichrasti* than to *P. a. yucatanensis*. Traylor (1941) and Brodkorb (1943a) also placed their specimens from southern Campeche within this form.

WEIGHT. Three males weighed 27.5, 27.9, and 32.6 grams; a female 28.3 grams.

PLATYPSARIS AGLAIAE YUCATANENSIS Ridgway.

Platypsaris aglaiae yucatanensis Ridgway, Biol. Soc. Wash., Proc., 19:120, 1906. (Yucatán.)

RANGE. The race is endemic to Yucatán and the northern parts of Quintana Roo and Campeche; probably accidental on Isla Cozumel and of doubtful occurrence on Isla Holbox.

SPECIMENS. Quintana Roo—Carrillo Puerto, 2♂, Mar. 27, 1949, 1♂, June 10, 1950; Tabi, 1♂, Mar. 28, 1♀, Apr. 4, 1953; 15 km. NW. Kantunil-Kín, 1♂, Dec. 3, 1♂, Dec. 14, 1950; Xcan, 1♀, Apr. 26, 1949. Yucatán—San Diego, 1♀, Mar. 18, 1950; 20 km. E. Sucopó, 1♀, Apr. 22, 1949; Xocempich, 1♂, May 12, 1949. Campeche—Ichek, 2♂, 1♀, Dec. 24, 1949, 1♂, July 21, 1950, 1♀, Apr. 22, 1♂, Apr. 24, 1952; Champotón, 1♀, Jan. 22, 1♀, Jan. 23, 1♂, Jan. 25, 1951.

HABITAT. Deciduous forest and low rain forest.

REMARKS. A single juvenal was collected on Isla Cozumel by Devis (Salvin, 1885) many years ago but the species has not been recorded from there again. Although the island would seem to be suitable for becards, the lack of additional records makes it appear that their occurrence is accidental.

There is a specimen collected by Gaumer which is said to have come from Isla Holbox (Salvin, 1889). The island is not suited for the species and I believe the record hypothetical.

BREEDING. Breeding birds were collected in late March and late April. There are no data for later in the spring.

WEIGHT. Five males weighed 25.8, 29.0, 30.0, 31.6, and 32.0 grams; four females 27.5, 29.2, 31.9, and 33.3 grams.

TITYRA SEMIFASCIATA PERSONATA Jardine and Selby.
Masked Tityra.

Tityra personata Jardine and Selby, Ill. Ornith., 1, pl. 24, 1827. (Real del Monte, Hidalgo.)

Tityra semifasciata deses Bangs, Biol. Soc. Wash., Proc., 28:125, 1915. (Chichén Itzá, Yucatán.)

RANGE. The species occurs from Mexico to Brazil; the race from Tamaulipas through eastern Mexico, including the entire Peninsula, to Honduras and El Salvador; *T. s. griseiceps* and *T. s. hannumi* on the Pacific slope of Mexico.

SPECIMENS. Quintana Roo—Chetumal, 1♀, Nov. 3, 1♀, Nov. 25, 1♂, 1♀, Nov. 26, 1♀, Nov. 29, 2♀, Nov. 30, 1948; Bacalar, 1♂, Feb. 16, 1952; Carrillo Puerto, 1♂, June 5, 1♀, June 8, 1950; Laguna Chichancanab, 1♀, Mar. 11, 1951; 15 km. NW. Kantunil-Kín, 1♂, Dec. 12, 1950. Campeche—Champotón, 1♀, Jan. 22, 1♂, Jan. 24, 1951.

HABITAT. Edges of rain forest and generally throughout deciduous forest.

REMARKS. Although Ridgway (1907) thought the Yucatán population might be differentiated from *T. s. personata*, and Bangs (1915) named it *T. s. deses*, I am unable to recognize the race.

T. s. deses was described as differing from *T. s. personata* in that the male is lighter gray dorsally and nearly pure white ventrally, and the female is more brown dorsally and lighter ventrally.

Brodkorb (1943a) agreed with Traylor (1941) that the color characters of *T. s. deses* are not consistent, but he believed the population could be recognized by its smaller size. Instead of restricting the race to Yucatán he expanded it to include the area as far as southeastern Veracruz and northern Petén.

In addition to the series in the present collection, I have examined the type and six topotypes of *T. s. deses*, and 68 specimens from Mexico, Guatemala, British Honduras, Honduras, and El Salvador.

There is a very slight individual variation in the coloration of the males but I can discern no geographic trend; there are some rather pale birds from the Peninsula but equally light, or even lighter, birds can be found in other regions. The dorsal coloration of the females is more variable and I suspect that a certain amount of the variation can be attributed to juvenal males having been incorrectly sexed. Several of the topotypes are rather brown but a number of similar birds can be found throughout the range.

I am not able to confirm Brodkorb's discovery (1943a) of a difference in size between the two races. It is true that the largest extremes in the series do not come from the Peninsula or nearby areas, but are scattered from Mexico to El Salvador. However, with the exception of these few birds there is a complete overlap in measurements. With a very large series of specimens it might be possible to demonstrate a slight mean difference in size, but with the material presently available I am unable to do so, much less arrive at the very marked separation in size which Brodkorb found.

BREEDING. My only record is that of a female with a slightly enlarged ovary taken on March 11. Chapman (1896) found birds about to breed in late March.

WEIGHT. Three males weighed 71.6, 84.6, and 88.6 grams; three females weighed 69.8, 73.0, and 87.6 grams. A single female collected at Ocozacoautla, Chiapas, weighed 96.3. The measurements of the wing, bill, and tail of this specimen are exactly the same as those of a female from Chichén Itzá, whose weight, unfortunately, is not known. However, the fact that the specimen from Chiapas is considerably heavier than any, of either sex, from the Peninsula, although its linear measurements are equalled or exceeded by Peninsular specimens, may indicate that geographical variation in body mass exists within this species.

TITYRA INQUISITOR FRASERII (Kaup).
Black-capped Tityra.

Psaris fraserii Kaup, Zool. Soc. London, Proc., 19:47, 1851(–1852). (Veracruz.)

RANGE. The species ranges from Mexico to northern Argentina; the race from San Luis Potosí through eastern Mexico, including Yucatán (Boucard, 1883), Quintana Roo, and Campeche, to Panama.

SPECIMENS. Quintana Roo—Chetumal, 1 ♂, Dec. 23, 1 ♂, Dec. 27, 1948; Tabi, 1 ♂, Mar. 8, 1949, 1 ♀, Apr. 4, 1953; Xcan, 1 ♀, Apr. 25, 1 ♂, 1 ♀, Apr. 26, 1949. Campeche—2 km. N. Aguada Seca, 1 ♀, Feb. 6, 1951.

HABITAT. Rain forest and occasionally in high deciduous forest.

BREEDING. The male and female collected on April 26 were in reproductive condition.

WEIGHT. Four males weighed 44.2, 44.5, 46.2, and 47.0 grams; two females 39.2 and 45.3 grams.

Family PIPRIDAE

PIPRA MENTALIS MENTALIS Sclater.
Red-capped Manakin.

Pipra mentalis Sclater, Zool. Soc. London, Proc., 24:299, 1856(–1857). (Córdoba, Veracruz.)

RANGE. The species is distributed from Mexico to Ecuador and Colombia; the race from Oaxaca and Veracruz to Costa Rica; on the Peninsula in Yucatán (Sclater, 1888), Campeche, and Quintana Roo; records from Isla Mujeres (Sclater, 1888) dubious.

SPECIMENS. Quintana Roo—Chetumal, 1 ♂, Nov. 30, 1948; Km. 21, Chetumal-Bacalar Rd., 1 ♂, Mar. 14, 1952; Ucum, 1 ♂, Feb. 20, 1952; Bacalar, 1 ♂, Feb. 14, 1952; Carrillo Puerto, 2 ♂, Apr. 15, 1950. Campeche—2 km. N. Aguada Seca, 1 ♀, Feb. 6, 1951.

HABITAT. Rain forest with some low brush; second growth bordering trails particularly suitable.

REMARKS. Sclater (1888) listed one male and three females of this species as having been collected by Gaumer on Isla Mujeres. This is another instance of a rain forest species being recorded by Gaumer well outside of its usual habitat. The record appears to be of questionable validity.

The species is rather rare throughout the Peninsula.

WEIGHT. One male weighed 17.3 and the female 18.6 grams.

MANACUS CANDEI (Parzudaki).
White-collared Manakin.

Pipra candeï Parzudaki, Rev. Zool., 4:306, 1841. (Trujillo, Honduras.)

RANGE. A monotypic species ranging from Oaxaca and Veracruz south to Costa Rica; on the Peninsula in extreme southern Campeche (Traylor, 1941) and Quintana Roo.

SPECIMENS. Quintana Roo—Agua Blanca, 2♀, June 1, 1♀, June 2, 3♂, June 5, 1949; Estero Franco, 1♂, Jan. 28, 1949.

HABITAT. Heavy rain forest with clear understory.

REMARKS. On the Peninsula the species is restricted to the heaviest forest. The wet forest bordering the Río Hondo is ideal and the species occurs in large numbers.

BREEDING. All of the birds collected in June were breeding. One of the birds collected on June 1 contained a fully formed egg.

WEIGHT. Three mature males weighed 19.8, 20.0, and 21.0 grams, an immature male 23.0 grams, two breeding females without excessively large ova 16.8 and 20.8 grams, and the female with an egg 20.5 grams.

SCHIFFORNIS TURDINUS VERAЕ-PACIS (Sclater and Salvin).
Thrush-like Manakin.

Heteropelma verae-pacis Sclater and Salvin, Zool. Soc. London, Proc., 28:300, 1860. (Choctum, Vera Paz, Guatemala.)

RANGE. The species occurs from Mexico to Brazil and Bolivia; the race from Veracruz and Chiapas through Central America to Panama; on the Peninsula in Campeche (Traylor, 1941) and Quintana Roo.

SPECIMENS. Quintana Roo—Agua Blanca, 1♀, June 1, 1♂, June 5, 1949; 24 km. NW. Xtocomo, 1♂, Feb. 27, 1951; 15 km. NW. Kantunil-Kin, 1♂, Dec. 14, 1950.

HABITAT. Rain forest.

REMARKS. This manakin is shy, quiet, and easily overlooked. It appears to be excessively rare on the Peninsula, except in the heaviest forest at its base.

BREEDING. The two birds collected in early June were in full reproductive condition. Traylor (1941) found two males in late January or early February which were in breeding condition, and the specimen I collected on February 27 had slightly enlarged testes. All of this points toward a prolonged breeding season.

WEIGHT. Three males weighed 27.3, 28.4, and 28.5 grams; a female with a very enlarged ovary 37.9 grams.

Family TYRANNIDAE

SAYORNIS PHOEBE (Latham).
Eastern Phoebe.

Muscicapa phoebe Latham, Index. Ornith., 2:489, 1790. (New York.)

RANGE. A monotypic species which breeds from southern Canada through much of the eastern United States south to central Texas and Georgia; winters from the southern United States to southern Mexico and Cuba; one record from Quintana Roo (Peters, 1913).

PYROCEPHALUS RUBINUS BLATTEUS Bangs.
Vermilion Flycatcher.

Pyrocephalus rubineus blatteus Bangs, Biol. Soc. Wash., Proc., 24:189, 1911.
(Sabune District, British Honduras.)

RANGE. The species occurs from the southern United States to Argentina and the Galapagos Islands; absent from much of Central America; the race from southern Veracruz to Honduras; on the Peninsula in Quintana Roo (Peters, 1913), Yucatán, and Campeche; records from Isla Cozumel (Sclater, 1888) doubtfully valid; *P. r. mexicanus* contiguous to the north and west.

SPECIMENS. Yucatán—Sisal, 1♂, 1♀, Jan. 6, 3♂, 2♀, Jan. 7, 1♂, Jan. 9, 1951; Santa Clara, 1♂, May 6, 1♂, May 7, 1♀, Sept. 20, 1949, 1♀, Jan. 12, 1♀, Mar. 27, 1♂, Aug. 23, 1♂, Aug. 28, 2♂, Aug. 29, 1♂, Aug. 31, 1♂, Sept. 2, 1♂, Sept. 13, 1950, 1♂, 1♀, May 14, 1952; Mérida-Progreso Rd. 1♀, Sept. 7, 1950; Mérida, 1♀, Oct. 6, 1♀, Oct. 20, 1950. Campeche—Champotón, 1♂, Jan. 21, 1♂, Jan. 23, 1951.

HABITAT. Principally in the coastal scrub of Yucatán; extremely local elsewhere on the Peninsula, where found in extensive clearings.

REMARKS. Vermilion Flycatchers are ubiquitous in the sisal and *Opuntia* scrub of Yucatán, but are very rarely seen inland.

Sclater (1888) listed eight specimens as having been collected by Gaumer on Isla Cozumel. The species has not been recorded from the island since, which once again casts doubt on the veracity of Gaumer's record.

WEIGHT. Six mature males weighed 12.8, 13.6, 13.7, 13.8, 14.1, and 16.1, one young male 12.1, and three mature females 13.0, 14.0, and 14.3 grams.

MUSCIVORA FORFICATA (Gmelin).
Scissor-tailed Flycatcher.

Muscicapa forficata Gmelin, Syst. Nat., 1:931, 1789. (Mexico.)

RANGE. A monotypic species breeding from southern Nebraska to southern Texas; winters from southern Mexico to Panama; on the Peninsula known only from Campeche.

SPECIMENS. Campeche—40 km. S. Cd. Campeche, 2♂, Mar. 5, 1951.

HABITAT. Open fields.

REMARKS. Between January 20 and March 5, 1951, several trips were made over the road between Ciudad Campeche and Champotón. On each trip a few Scissor-tailed Flycatchers were seen perched on the telegraph line which parallels the road. There appears to be no other record from the Peninsula.

WEIGHT. The birds weighed 38.6 and 40.5 grams.

MUSCIVORA TYRANNUS MONACHUS (Hartlaub).
Fork-tailed Flycatcher.

Tyrannus (Milvulus) monachus Hartlaub, Rev. Zool., 7:214, 1844. (Guatemala.)

RANGE. The species occurs from southern Mexico to Patagonia; the race from Veracruz to northern South America; on the Peninsula in Campeche (Brodkorb, 1943a) and Quintana Roo.

SPECIMENS. Quintana Roo—Estero Franco, 2♂, 1♀, Jan. 27, 1949.

HABITAT. Vicinity of marshes.

REMARKS. This species is very localized on the Peninsula, probably because extensive marshes are found only at the base of the Peninsula. Previously it had been recorded from Quintana Roo by Peters (1913).

TYRANNUS TYRANNUS (Linnaeus).
Eastern Kingbird.

Lanius tyrannus Linnaeus, Syst. Nat., ed. 10, 1:94, 1758. (South Carolina.)

RANGE. A monotypic species breeding from British Columbia east to Nova Scotia and south to Nevada and Florida; winters in South America; a migrant in Yucatán and Quintana Roo, including Isla Cozumel (Salvin, 1889) and Cayo Culebra, and on all of the islands of Banco Campeche (Paynter, 1953).

SPECIMENS. Quintana Roo—Cayo Culebra, 1 ♂, 1 ♀, Apr. 3, 1949. Yucatán—Santa Clara, 1 ♂, 1 ♀, Sept. 20, 1949, 1 ♂, Aug. 28, 1 ♀, Aug. 31, 1 ♀, Sept. 1, 1950.

HABITAT. Primarily in open areas in coastal and insular localities; less commonly inland.

REMARKS. From late August through September and from mid-March through part of May, Eastern Kingbirds become a conspicuous element of the coastal and insular avifauna. The absence of records from the mainland of Campeche is without significance.

WEIGHT. A male and a female, both very fat, weighed 52.5 and 48.3 grams, respectively.

TYRANNUS MELANCHOLICUS CHLORONOTUS Berlepsch.
Tropical Kingbird. Xtakay.

Tyrannus chloronotus Berlepsch, Ornis, 14:474, 1907. (Temax, Yucatán.)

RANGE. The species is distributed from southern Texas to northern Argentina; the race from Oaxaca and southern Veracruz to northern Colombia and Venezuela; throughout the Peninsula and on Banco Chinchorro (Griscom, 1926b) Cayo Culebra (sight record), Isla Cozumel, Isla Mujeres, Isla Contoy, and Isla Holbox; *T. m. couchii* contiguous to the north.

SPECIMENS. Quintana Roo—Chetumal, 1 ♀, Nov. 2, 1 ♀, Nov. 18, 1 ♂, Dec. 27, 1 ♂, Dec. 30, 1948; Xulah, 1 ♀, Nov. 11, 1948; Isla Cozumel, 1 ♀, Jan. 3, 1949; Isla Mujeres, 1 ♂, 1 ♀, Dec. 23, 1 ♀, Dec. 24, 1950; Isla Contoy, 1 ♂, 1 ♀, Dec. 27, 1950; Isla Holbox, 1 ♂, 1 ♀, Dec. 19, 1950. Yucatán—El Cuyo, 1 ♀, Dec. 10, 1950; Sisal, 1 ♀, Jan. 7, 1951; Celestún, 1 ♂, Jan. 14, 1951. Campeche—Chompotón, 1 ♂, 1 ♀, Jan. 21, 1951.

HABITAT. Open coastal and insular areas; unforested regions inland.

REMARKS. Kingbirds are ubiquitous on the coasts and islands, but are rather local inland, owing to the lack of unforested areas.

WEIGHT. Six males ranged from 44.2 to 47.9 grams with a mean of 46.18 ± 0.61 grams; nine females ranged from 35.7 to 43.5 grams with a mean of 40.95 ± 0.77 grams.

TYRANNUS CUBENSIS Richmond.
Giant Kingbird.

Tyrannus cubensis Richmond, Auk, 15:330, 1898. (Cuba.)

RANGE. Confined to Cuba, the Isle of Pines, and the southern Bahamas; one record from Isla Mujeres, Quintana Roo (Sclater, 1888) where probably accidental.

TYRANNUS DOMINICENSIS DOMINICENSIS (Gmelin).
Gray Kingbird.

Lanius dominicensis Gmelin, Syst. Nat., 1:302, 1758. (Hispaniola.)

RANGE. The species occurs from the extreme southeastern United States through the Antilles to extreme northern South America; the race throughout the range with the exception of most of the Lesser Antilles; one record from Isla Cozumel (Ridgway, 1885) and one record from Isla Cancun (Blake, *in litt.*)

REMARKS. A single individual was collected on Isla Cozumel in late January (Ridgway, 1885) and another on Isla Cancun on January 27, 1940 (Blake, *in litt.*). Since no other specimens have been taken, it seems logical to conclude that the occurrence of the species on the islands off the Peninsula is accidental, or at least that it is an excessively rare winter visitant.

LEGATUS LEUCOPHAUS VARIEGATUS (Sclater).
Piratic Flycatcher.

Elaenia variegata Sclater, Zool. Soc. London, Proc., 24:297, 1856(–1857). (Córdoba, Veracruz.)

RANGE. The species occurs from southeastern Mexico to Argentina; the race from Veracruz to Guatemala; one record from Quintana Roo (Peters, 1913).

HABITAT. Known only from the region of heavy rain forest.

REMARKS. Wetmore (1943) has suggested that the species is merely a summer resident in southern Veracruz. The same may possibly be true for the Peninsula, since Peters' specimen was collected in the early spring and many months of field work during the winter has never produced another.

MYIODYNASTES LUTEIVENTRIS LUTEIVENTRIS Sclater.
Sulfur-bellied Flycatcher.

Myiodynastes luteiventris Sclater, Zool. Soc. London, Proc., 27:42, 1859. (Orizaba, Veracruz.)

RANGE. The species breeds from southern Arizona to Costa Rica; winters primarily in Bolivia and Peru; the race occupies the entire range, with the exception of Arizona and northwestern Mexico, where *M. l. swarthi* is present; recorded from Yucatán and Quintana Roo.

SPECIMENS. Quintana Roo—Chetumal, 1♂, May 26, 2♂, June 22, 1949; Laguna Chacabacab, 1♂, May 14, 1949; Km. 21 Chetumal-Bacalar Rd., 1♀, June 30, 1952; Xcan, 1♂, Apr. 26, 1♀, Apr. 28, 1949. Yucatán—Sucopó, 1♀, Apr. 28, 1949.

HABITAT. Second growth and forest edges, chiefly within the rain forest zone.

REMARKS. The earliest recorded arrival of this species on the Peninsula is April 5 (Peters, 1913). Zimmer (1937) had a single bird which was labeled as having been collected in Yucatán in February, but all other data were lacking and the record is of doubtful validity.

Presumably owing to the absence of collectors, there are no records for birds later than June 30, although the species is undoubtedly present until July or August.

The series contains several specimens which are as pallid as *M. l. swarthi*, but no geographical trend is evident. The irregular tendency toward paleness in Peninsular material has been noted previously by van Rossem (1940).

BREEDING. In this series there are records from the last week in April until the last week in June.

WEIGHT. Four males weighed 43.3, 43.7, 44.9, and 45.5; two females 48.7 and 49.0 grams.

MYIODYNASTES MACULATUS INSOLENS Ridgway.
Streaked Flycatcher.

Myiodynastes audax insolens Ridgway, Man. No. Am. Birds, p. 332, 502, 1887. (Mirador, Veracruz.)

RANGE. The species occurs from southern Tamaulipas to northern Guatemala, and from Costa Rica to Argentina; the race within the northern range, including Yucatán (Ridgway, 1907), Campeche (Ridgway, 1907), and Quintana Roo; winters in South America.

SPECIMENS. Quintana Roo—Chetumal, 1♀, May 6, 1♂, June 21, 1949; Carrillo Puerto, 1♀, June 1, 1♀, June 7, 1♂, June 14, 1950; Xcan, 1♂, Apr. 28, 1♂, Apr. 29, 1949; Kantunil-Kín, 1♀, Apr. 24, 1949.

HABITAT. Second growth and forest edges within the zone of rain forest.

REMARKS. It is unfortunate that this study can add no information on the relationship between *M. maculatus* and its sibling species, *M. luteiventris*. In the course of ordinary field work one is unable to distinguish any differences in the time of spring arrival, habitat preference where their ranges overlap, population size, behavior, etc., although close study will probably reveal various subtle diversities.

BREEDING. The bird collected on April 24 had a slightly enlarged gonad, but all of the remaining specimens were in full breeding condition.

WEIGHT. Two males weighed 45.6 and 46.9; two females 46.6 and 48.9 grams.

MEGARYNCHUS PITANGUA MEXICANUS (Lafresnaye).
Boat-billed Flycatcher. Xtakay.

Saurophagus mexicanus Lafresnaye, Rev. Mag. Zool., 3:473, 1851. (Mexico.)

RANGE. The species ranges from Mexico to Argentina; the race from Tamaulipas through eastern Mexico, including the entire Yucatán Peninsula, to Panama; two races on the Pacific slope of Mexico.

SPECIMENS. Quintana Roo—Chetumal, 1 ♀, Dec. 20, 1948, 1 ♂, Jan. 21, 1949; Bacalar, 1 ♂, Feb. 7, 1952; 15 km. NW. Kantunil-Kín, 1 ♀, Dec. 13, 1950. Yucatán—Xocempich, 1 ♂, Dec. 15, 1950. Campeche—Champotón, 1 ♂, Jan. 23, 1951.

HABITAT. Forest edges, second growth, and small clearings within forested regions.

REMARKS. In contrast to *Pitangus sulphuratus*, which it superficially resembles, *M. pitangua* is seldom seen on exposed perches in the center of extensive clearings. It is most often found in high second growth and in forest edges.

WEIGHT. Two males and a female weighed 64.2, 67.5, and 56.3 grams, respectively.

MYIOZETETES SIMILIS TEXENSIS (Giraud).
Vermilion-crowned Flycatcher. Xtakay.

Muscicapa texensis Giraud, Desc. Sixteen New Spp. Texas Birds, p. 5, 1841. ("Texas.")

RANGE. The species is distributed from Mexico to Argentina; the race from Michoacán and southern Tamaulipas to Costa Rica; throughout the Yucatán Peninsula; doubtfully from Isla Cozumel; *M. s. primulus* in western Mexico.

SPECIMENS. Quintana Roo—Chetumal, 1 ♂, Nov. 22, 1 ♀, Nov. 23, 1 ♂, Nov. 30, 1 ♀, Dec. 20, 1 ♂, Dec. 24, 1 ♀, Dec. 30, 1948; Bacalar, 1 ♀, Feb. 7, 1 ♀, Feb. 10, 1 ♂, 1 ♀, Feb. 12, 1952. Yucatán—Xocempich, 1 ♂, Dec. 15, 1950, 1 ♂, Jan. 11, 1951. Campeche—Champotón, 1 ♂, Jan. 24, 1950.

HABITAT. Open country throughout the Peninsula.

REMARKS. This ubiquitous tyrannid is particularly numerous in the vicinity of fresh water.

A single specimen is listed by Sclater (1888) as having been obtained on Isla Cozumel by Gaumer for the Salvin-Godman collection. The species, however, is not included in Salvin's (1889) list of birds from that island and there has never been another record of it from there. The validity of the record is doubtful.

BREEDING. The species was breeding in mid-May at Laguna Chacanbacab where it nests in mimosas bordering the lake.

WEIGHT. Four males weighed 30.3, 30.4, 34.0, and 34.9; two females 31.0 and 36.3 grams.

PITANGUS SULPHURATUS GUATIMALENSIS (Lafresnaye).

Great Kiskadee. Xtakay.

Saurophagus guatimalensis Lafresnaye, Rev. Mag. Zool., 4:462, 1852. (Guatemala.)

RANGE. The species occurs from southern Texas to Argentina and Uruguay; the race from southern Veracruz and southern Oaxaca to Panama; on the Peninsula in Campeche (Traylor, 1941), Yucatán, and Quintana Roo; records from Islas Mujeres and Cozumel (Salvin, 1889) require confirmation; *P. s. texanus* contiguous to the north and two additional races in western and northwestern Mexico.

SPECIMENS. Quintana Roo—Chetumal, 2♀, Nov. 3, 1♀, Dec. 4, 1♀, Dec. 24, 1948, 1♀, Jan. 22, 1949. Yucatán—Santa Clara, 1♂, Sept. 2, 1949.

HABITAT. Open country throughout the Peninsula.

REMARKS. Salvin (1889) records the species from Islas Cozumel and Mujeres on the basis of several Gaumer specimens, but during my work on the islands I failed to see a single one of these noisy and conspicuous birds.

WEIGHT. Three females weighed 63.9, 66.5, and 78.6 grams.

MYIARCHUS CRINITUS (Linnaeus).

Crested Flycatcher.

Turdus crinitus Linnaeus, Syst. Nat., ed. 10, 1:170, 1758. (Carolina.)

RANGE. The species breeds in North America from Manitoba east to New Brunswick and south to Texas and Florida; winters from southern Mexico to Colombia; records from Yucatán (Traylor, 1941) and Quintana Roo.

SPECIMEN. Quintana Roo—Chetumal, 1♂, Oct. 26, 1952.

HABITAT. In clearings in both the deciduous and rain forest zones.

REMARKS. The species was known previously on the Peninsula from two specimens taken in early November at Chichén Itzá (Traylor, 1941). It is presumably a rare visitor.

MYIARCHUS CINERASCENS CINERASCENS (Lawrence).
Ash-throated Flycatcher.

Tyrannula cinerascens Lawrence, Lyc. Nat. Hist. New York, Ann., 5:121, 1851.
(Western Texas.)

RANGE. The species breeds from Washington and Utah through the western United States to Sinaloa and Tamaulipas; sometimes considered to range to Costa Rica but southern forms doubtfully conspecific; nominate race south to northern Mexico, with the exception of Baja California which is occupied by *M. c. pertinax*; winters south to Guatemala; recorded from Yucatán (Chapman, 1896), where very rare or possibly accidental.

HABITAT. Known only from the zone of deciduous forest.

REMARKS. Chapman (1896) collected two of the three examples of this species which he saw at Chichén Itzá in March. There is no other record from the Peninsula.

MYIARCHUS TYRANNULUS COOPERI Baird.
Brown-crested Flycatcher. Xtakay.

Myiarchus cooperi Baird, in Baird, Cassin, and Lawrence, Rept. Expl. and Survey R. R. Pacific, 9:180, 1858. (Mexico.)

RANGE. The species occurs from southern Arizona east to southern Texas and southward through Mexico, Central America, and the Lesser Antilles to northern Argentina; the race from southern Texas to Honduras; some northernmost birds winter in southern portion of range; throughout the Peninsula, including Isla Cozumel, during all seasons; *M. t. magister* contiguous in western Mexico; *M. t. brachyurus*, possibly not conspecific, from El Salvador to Costa Rica.

SPECIMENS. Quintana Roo—Chetumal, 1?, Nov. 27, 1♂, Dec. 4, 1♀, Dec. 8, 1948, 1♂, May, 1949; 1♀, May 21, 1♂, May 22, 1950; Tabi, 1♂, Mar. 10, 1949; Isla Cozumel, 2♂, June 7, 1952. Yucatán—Temax, 1♂, Dec. 8, 1951; Dzidzantún, 1♀, Apr. 27, 1♂, Apr. 29, 1952; Santa Clara, 1♂, Aug. 30, 1950. Campeche—Champotón, 1♂, Jan. 22, 1♀, Jan. 23, 1♂, Jan. 24, 1951.

HABITAT. Within the zone of rain forest this species appears to be found only in areas of extensive second growth, but within the deciduous forest region it occurs in all manner of clearings and light forest. It also ranges into the coastal scrub, but appears to be comparatively uncommon there.

BREEDING. Breeding specimens have been taken in May and June.

WEIGHT. Five males weighed 39.4, 39.5, 39.5, 40.0, and 41.1; two females 37.2 and 37.9 grams.

MYIARCHUS YUCATANENSIS Lawrence.
Yucatán Flycatcher. Xtakay.

Myiarchus yucatanensis Lawrence, Acad. Nat. Sci. Phila., Proc., 22:235, 1871.
(Mérida, Yucatán.)

RANGE. Endemic to Yucatán, Quintana Roo, and Campeche; record from Isla Cozumel (Salvin, 1889) requires confirmation.

SPECIMENS. Quintana Roo—Chetumal, 1♀, Dec. 10, 1♀, Dec. 11, 1948; Tabi, 1♂, Mar. 16, 1949, 1♂, Mar. 28, 1953. Yucatán—Chemax, 1♂, Mar. 20, 1950; Xocempich, 1♀, Oct. 2, 1♂, Oct. 3, 1950. Campeche—Ichek, 1♀, Dec. 22, 1949, 1♀, Apr. 22, 1952; Champotón, 1♂, Jan. 22, 1♂, Jan. 26, 1951.

HABITAT. Primarily a species of the deciduous forest region where found in clearings or thinly wooded areas. In the rain forest zone it is confined to light second growth and clearings.

REMARKS. *Myiarchus yucatanensis* is not unexpected on Isla Cozumel, but the fact that Gaumer's two specimens (Salvin, 1889) constitute the only record of the species on the island causes one to be somewhat hesitant in accepting it.

Slater (1888), and later Nelson (1904), suggested that *M. yucatanensis* is most nearly related to *M. stolidus* of the West Indies, but, although they are very similar in color pattern and size, there is a noticeable difference in their bills. Whether the two species are more closely related to one another than to other members of the genus is doubtful.

BREEDING. The male collected at Tabi on March 16 had fully enlarged gonads. Chapman (1896) also found breeding birds in mid-March. There are no data for later in the spring.

WEIGHT. Two males weighed 21.4 and 23.0; two females 19.4 and 22.0 grams.

MYIARCHUS TUBERCULIFER PLATYRHYNCHUS Ridgway.
Dusky-capped Flycatcher. Xtakay.

Myiarchus platyrhynchus Ridgway, Biol. Soc. Wash., Proc., 3:23, 1855. (Isla Cozumel, Quintana Roo.)

RANGE. The species is resident from northern Mexico to Argentina; the race throughout the Peninsula, including Isla Cozumel, and in adjacent Tabasco, and probably in adjacent northern British Honduras and Petén; *M. t. connectens* contiguous in Guatemala and British Honduras; *M. t. lawrenceii* in eastern and southern Mexico.

SPECIMENS. Quintana Roo—Chetumal, 1♂, Dec. 11, 1948; Ucum, 1♀, Feb. 25, 1952; 46 km. W. Chetumal, 1♂, Feb. 15, 1949; Isla Tamalcab, 1♀, Dec. 12, 1948; Laguna Chacanbacab, 1♀, May 14, 1949; Tabi, 1♂, Mar. 23, 1♂, Mar. 28, 1953;

Carrillo Puerto, 1 ♀, June 6, 1950; Xcan, 2 ♂, Apr. 28, 1949, 1 ♀, Apr. 10, 1952; 15 km. NW. Kantunil-Kín, 1 ♀, Dec. 12, 1950. Yucatán—Sisal, 1 ♀, Jan. 6, 1 ♂, Jan. 7, 1 ♂, Jan. 9, 1951; Uxmal, 1 ♂, Jan. 17, 1 ♂, Jan. 18, 1951. Campeche—Ichek, 1 ♀, Sept. 25, 1950; Champotón, 1 ♀, Jan. 22, 1951.

HABITAT. The species occurs in both the deciduous and rain forest zones, but appears more numerous in the former. In both vegetation zones it is present in clearings and in light forest. The specimens collected at Sisal were found in the mangroves on the inner side of the barrier bar. There is no other record from the area of coastal scrub, but this may be due to the absence of observers.

REMARKS. The specimen from Chetumal may possibly be a hybrid between *M. tuberculifer* and *M. yucatanensis*. It is similar to *M. tuberculifer* in that it is small, has a dark head, has a horn colored rather than black bill, and lacks the rufous markings on the rectrices. It is, however, very pale below and the bill is rather round and narrow, characters which suggest *M. yucatanensis*, but which are not pronounced enough to warrant assumption that this is certainly a hybrid.

BREEDING. Birds collected in April and May were breeding.

WEIGHT. *M. t. platyrhynchus* has the smallest linear measurements of the Mexican mainland races and probably also weighs less than the other races. Six males weighed 14.7, 15.8, 15.9, 17.7, 19.1, and 19.7; four females 15.0, 16.0, 17.3, and 17.9 grams. Two males and two females of *M. t. lawrenceii* from Ocozocoautla, Chiapas, weighed 21.8 and 22.5, and 20.0 and 22.0 grams, respectively.

CONTOPUS VIRENS (Linnaeus). Eastern Wood Pewee.

Muscicapa virens Linnaeus, Syst. Nat., ed. 12, 1:327, 1766. (Carolina.)

RANGE. A monotypic species breeding from Manitoba and Texas eastward; winters from Nicaragua to central South America; migrant throughout the Peninsula and on Isla Cozumel (Sclater, 1888), Cayos Arcas, Triángulo Oeste, and Arrecife Alacrán (Paynter, 1953).

SPECIMENS. Quintana Roo—Chetumal, 1 ♀, May 5, 1949. Yucatán—Xocempich, 1 ♀, Sept. 29, 1950; Mérida, 1 ♀, Oct. 6, 1950; Santa Clara, 1 ♂, Aug. 24, 1 ♀, Aug. 25, 1950; Isla Pérez, Arrecife Alacrán, 1 ♀, Sept. 1, 1952. Campeche—Ichek, 1 ♀, Aug. 24, 1 ♂, Aug. 25, 1952; Cayos Arcas, 1 ♂, Aug. 29, 1952.

HABITAT. Appears to visit open country and light forest throughout the Peninsula and its islands.

REMARKS. The extreme migration dates, as known at present, range from Aug. 24 to Sept. 29, and from April 1 (Peters, 1913) to May 5.

WEIGHT. A female weighed 11.4 grams.

CONTOPUS CINEREUS BRACHYTARSUS (Sclater).
Tropical Pewee.

Empidonax brachytarsus Sclater, Ibis, 1:441, 1859. (Córdoba, Veracruz.)

RANGE. The species ranges from southern Mexico to Argentina; the race from southern Veracruz and Oaxaca to Panama; on the Peninsula in Campeche (Ridgway, 1907), to Yucatán, and Quintana Roo, including Isla Cozumel.

SPECIMENS. Quintana Roo—Chetumal, 1♂, Dec. 20, 1948; 23 km. NW. Chetumal, 1♀, Nov. 11, 1948; Carrillo Puerto, 1♀, June 21, 1950; Xcan, 1♀, Apr. 24, 1949, 1♂, Apr. 11, 1952; 15 km. NW. Kantunil-Kín, 1♂, Dec. 20, 1950; Isla Cozumel, 1♀, Jan. 6, 1♂, Jan. 9, 1949. Yucatán—Xocempich, 1♀, Sept. 28, 1♂, Sept. 20, 1950; Santa Clara, 1♂, Aug. 25, 1950.

HABITAT. Light forest throughout the Peninsula; apparently very occasionally in coastal scrub.

WEIGHT. Three males and a female weighed 11.8, 12.5, 12.9, and 12.9 grams, respectively.

EMPIDONAX FLAVIVENTRIS (Baird and Baird).
Yellow-bellied Flycatcher.

Tyrannula flaviventris W. M. and S. F. Baird, Acad. Nat. Sci. Phila., Proc., 1:283, 1843. (Carlisle, Pennsylvania.)

RANGE. A monotypic species breeding from northern Alberta and Newfoundland south to North Dakota and New York; winters from Tamaulipas to Panama; on the Peninsula recorded only from Campeche.

SPECIMEN. Campeche—2 km. N. Aguada Seca, 1♀, Feb. 6, 1951.

HABITAT. Thickets within the rain forest.

REMARKS. Ridgway (1907) included Campeche within the range of the species, apparently on the basis of an unpublished record. The specimen collected is the only one which I have seen on the Peninsula.

WEIGHT. It weighed 11.0 grams.

EMPIDONAX VIRESCENS (Vieillot).
Acadian Flycatcher.

Platyrrhynchos virescens Vieillot, Nouv. Dict. Hist. Nat., 27:22, 1816. (Near Philadelphia, Pennsylvania.)

RANGE. A monotypic form which breeds from Nebraska, Ontario, and Massachusetts, south to Texas and Florida; winters in northern South

America; recorded from Yucatán (Salvin and Godman, 1889) and doubtfully from Quintana Roo (Griscom, 1926a).

REMARKS. Salvin and Godman (1889) cited Mérida within the range of the species but gave no source for the record. Griscom (1926a) reported shooting a specimen at Palmul, Quintana Roo; the specimen appears not to have been preserved since Dr. Amadon informed me (*in litt.*) that it was not entered in the catalog of the American Museum of Natural History. Griscom collected at Palmul on February 9 and 10 (Griscom, 1926a)—a season when Acadian Flycatchers would be expected only in South America.

EMPIDONAX MINIMUS (Baird and Baird).
Least Flycatcher.

Tyrannula minima W. M. and S. F. Baird, Acad. Nat. Sci. Phila., Proc., 1:284, 1843. (Carlisle, Pennsylvania.)

RANGE. Breeds from Mackenzie east to Cape Breton Island and south to Montana and North Carolina; winters from southeastern Mexico to Panama and northern Peru; recorded from throughout the Peninsula, including Cayos Arcas (Paynter, 1953), and Islas Cozumel, Mujeres, and Holbox (Sclater, 1888).

SPECIMENS. Quintana Roo—Chetumal, 1♂, Nov. 9, 1♀, Nov. 15, 1♀, Nov. 23, 1♀, Dec. 16, 1948; Bacalar, 1♀, Feb. 12, 1♂, Oct. 27, 1952; Carrillo Puerto, 1♀, Apr. 8, 1949; Tabi, 1♂, Mar. 8, 1949; Kantunil-Kín, 1♂, Apr. 22, 1949. Yucatán—Xocempich, 1♂, Nov. 28, 1♀, Nov. 29, 1949, 1♀, Sept. 28, 1♂, Oct. 3, 1950, 1♀, Sept. 15, 1952; 10 km. N. Mérida, 1♂, Sept. 6, 1950; Mérida, 1♀, Oct. 5, 2♂, Oct. 6, 1♂, Oct. 9, 1♂, Oct. 10, 1♀, Oct. 11, 1♀, Oct. 20, 1950; Kimbilá, 1♂, Mar. 24, 1951. Campeche—Ichek, 1♂, Sept. 23, 1950.

HABITAT. Open country and thinly wooded areas.

REMARKS. It is strange that no examples of *E. traillii* or *E. virescens* were secured in spite of the number of specimens of this genus which were taken during migration.

Lawrence (1869) recorded *E. traillii* from Yucatán but an examination of the specimen, which is now in the National Museum, indicates that it is referable to *E. minimus*.

WEIGHT. Two males weighed 10.3 grams each; two females 7.8 and 8.6 grams. All were wintering birds.

MYIOBIUS BARBATUS SULPHUREIPYGIUS (Sclater).
Sulphur-rumped Flycatcher.

Tyrannula sulphureipygia Sclater, Zool. Soc. London, Proc., 24:296, 1857. (Córdoba, Veracruz.)

RANGE. The species ranges from southern Mexico to Bolivia and Brazil; the race from Veracruz through British Honduras and Guatemala; Penin-

sular records from Campeche and Quintana Roo, and from Isla Cozumel (Salvin, 1889), where probably accidental.

SPECIMENS. Quintana Roo—Agua Blanca, 1♂, June 4, 1949. Campeche—2 km. N. Aguada Seca, 1♂, 1♀, Feb. 7, 1951.

HABITAT. Occurs in thickets within heavy rain forest.

REMARKS. The species has been recorded previously at Pacaytun (Traylor, 1941), 30 miles north of Camp Mengel (= Alvaro Obregón) (Peters, 1913), and on Isla Cozumel (Salvin, 1889). With the exception of the last locality, the bird has been taken only in the region of the heaviest rain forest. This suggests that the Cozumel record, which is based on a single specimen obtained by Gaumer (Salvin, 1889), may be erroneous. However, inasmuch as Gaumer apparently never collected another example of this species anywhere in the region, it appears unlikely that he confused the locality when labeling the specimen.

BREEDING. The bird collected on June 4 had fully enlarged gonads.

WEIGHT. The two males and the female weighed 11.4, 12.5, and 9.1 grams, respectively.

ONYCHORHYNCHUS CORONATUS MEXICANUS (Sclater).

Royal Flycatcher.

Muscivora mexicana Sclater, Zool. Soc. London, Proc., 24:295, 1856(–1857). (Córdoba, Veracruz.)

RANGE. The species ranges from southern Mexico to Amazonia; South American population sometimes considered specifically distinct; the race from Oaxaca and Veracruz, through Yucatán (Lawrence, 1869), Campeche (Traylor, 1941), and Quintana Roo to Panama.

SPECIMENS. Quintana Roo—Agua Blanca, 1♂, 1♀, June 2, 1♂, 1♀, June 4, 1949; 46 km. W. Chetumal, 1♀, Feb. 11, 1949, 1♀, Aug. 13, 1950; 24 km. NW. Xtocomo, 1♂, Feb. 24, 1951; Carrillo Puerto, 2♀, June 10, 1♂, 1♀, June 20, 1950; Tabi, 1♂, Apr. 12, 1953.

HABITAT. Found primarily in heavy rain forest with an open floor but, occasionally, ranges into deciduous forest of moderate height.

REMARKS. It is interesting that this species, which elsewhere is found only in high wet forests, should occasionally penetrate far north on the Peninsula to the region of deciduous forest (*vide*, Lawrence, 1869; Boucard, 1883; Traylor, 1941).

In the southern part of the region it is locally common.

BREEDING. Three of the birds taken at Agua Blanca in early June were reproductively active. One of the three contained nearly fully developed ova. There are no data for the remaining spring specimens.

WEIGHT. Three males weighed 20.0, 20.6, and 21.6; three females 16.3, 17.2, and 18.0 grams.

PLATYRINCHUS MYSTACEUS TIMOTHEI Paynter.
White-throated Spade-bill.

Platyrinchus mystaceus timothei Paynter, Yale Peabody Mus., Postilla, No. 18:2, 1954. (24 km. NW. Xtocomo, Quintana Roo.)

RANGE. The species occurs from southern Mexico to Peru and Brazil; the race in Campeche (Traylor, 1941), Quintana Roo, Petén, and British Honduras; *P. m. cancrominus* from Veracruz to Nicaragua.

SPECIMENS. Quintana Roo—Agua Blanca, 1♀, June 2, 1949; Km. 21, Chetumal-Bacalar Rd., 1♂, May 22, 1952; 46 km. W. Chetumal, 1♀, Aug. 22, 1950; 24 km. NW. Xtocomo, 3♂, Feb. 24, 1951; Carrillo Puerto, 1♂, June 19, 1950; Tabi, 1♀, Mar. 18, 1949.

HABITAT. Undergrowth within rain forest or, occasionally, in that of high deciduous forest.

REMARKS. Within suitable habitats the species is fairly common, although it stays within a few feet of the ground and is difficult to observe.

WEIGHT. Three males weighed 8.0, 8.3, and 9.8; two females 7.5 and 10.7 grams.

TOLMOMYIAS SULPHURESCENS CINEREICEPS (Sclater).
Yellow-olive Flycatcher.

Cyclorhynchus cinereiceps Sclater, Ibis, 1:443, 1859. (Oaxaca.)

RANGE. The species is present from southern Mexico to Brazil and Bolivia; the race from Veracruz and Oaxaca to Costa Rica; recorded throughout the Peninsula.

SPECIMENS. Quintana Roo—Chetumal, 1♀, June 14, 1♂, June 15, 1♀, June 22, 1♂, June 30, 1949; 46 km. W. Chetumal, 1♂, Aug. 21, 1950; Ucum, 1♀, Feb. 22, 1♀, Feb. 23, 1952; Bacalar, 1♀, Feb. 19, 1952; Carrillo Puerto, 1♂, June 22, 1950; Tabi, 1♂, Mar. 9, 1949, 1♂, Apr. 13, 1953; Ch'ich', 1♂, May 12, 1953. Yucatán—Sucopó, 1♂, Apr. 21, 1950. Campeche—Pueblo Nuevo, 1♂, Sept. 22, 1950; Ichek, 1♀, May 24, 1952.

HABITAT. Nearly confined to the zone of rain forest where occurs in high second growth as well as in undisturbed forest; very rarely reaches high deciduous forest.

REMARKS. The species appears to be rather uncommon and local, but this may be because of its quiet and inconspicuous behavior.

Intermittent field work was begun in the vicinity of Chetumal in October, but it was mid-June before the species was first seen in that region. Although it is possible that it was absent from the area owing to a local seasonal movement, it is equally possible that it was present but overlooked until its nesting activity rendered it more conspicuous.

BREEDING. There are breeding records from the third week in April to late June.

WEIGHT. Four males weighed 12.6, 13.3, 14.2, and 14.3; two females 15.9 and 16.4 grams.

RHYNCHOCYCLUS BREVIROSTRIS BREVIROSTRIS (Cabanis).
Eye-ringed Flat-bill.

Cyclorhynchus brevirostris Cabanis, Arch. Naturg., 13:249, 1847. (Jalapa, Veracruz.)

RANGE. The species is distributed from southern Mexico to Ecuador; the race from Veracruz and Oaxaca to Panama; on the Peninsula in Quintana Roo and Campeche.

SPECIMENS. Quintana Roo—Agua Blanca, 1 ♂, June 2, 1949; Km. 21, Chetumal-Bacalar Rd., 1 ♂, June 10, 1951; 24 km. NW. Xtocomo, 1 ♂, Feb. 25, 1951; Carrillo Puerto, 1 ♂, 1 ♀, June 10, 1 ♀, June 13, 1950; Kantunil-Kín, 1 ♂, Apr. 23, 1949; 15 km. NW. Kantunil-Kín, 1 ♂, Dec. 12, 1950. Campeche—2 km. N. Aguada Seca, 1 ♀, Feb. 9, 1951.

HABITAT. Heavy rain forest.

REMARKS. *Rhynchocyclus brevirostris* is sparsely distributed even in the most suitable habitats.

BREEDING. Breeding males have been recorded on April 23 and June 2.

WEIGHT. Four males weighed 19.4, 20.5, 21.1, and 23.5 grams.

TODIROSTRUM CINEREUM FINITIMUM Bangs.
Common Tody-Flycatcher.

Todirostrum cinereum finitimum Bangs, Biol. Soc. Wash., Proc., 17:114, 1904. (San Juan Bautista [= Villahermosa], Tabasco.)

RANGE. The species ranges from southern Mexico to Brazil; the race from Veracruz to Panama; Peninsular records from Campeche (Traylor, 1941), and Quintana Roo, including Isla Mujeres (Sclater, 1888).

SPECIMENS. Quintana Roo—Vigía Chico, 1 ♂, Mar. 29, 1 ♂, 2 ♀, Mar. 31, 1949.

HABITAT. Thickets.

REMARKS. The species was known on the Peninsula previously from a specimen collected by Gaumer on Isla Mujeres (Sclater, 1888), from a specimen collected by Traylor (1941) at Pacaytun, Campeche, and from two specimens collected by Peters (1913) at Xcopen and Camp Mengel, Quintana Roo.

The only locality in which I found the species was at Vigía Chico, where a sizable flock was present in a small thicket lying between the water and a savannah.

BREEDING. The birds at Vigía Chico were approaching the breeding season; the gonads of the males were enlarged and those of the females were slightly enlarged.

WEIGHT. The males weighed 5.8 and 6.5; the females 5.7 and 6.3 grams.

TODIROSTRUM SYLVIA SCHISTACEICEPS Slater.
Slate-headed Tody-Flycatcher.

Todirostrum schistaceiceps Slater, Ibis, 1:444, 1859. (Oaxaca.)

RANGE. The species is present from southern Mexico to northern Brazil; the race from Veracruz and Oaxaca to Panama; one record from Quintana Roo.

SPECIMEN. Quintana Roo—Ch'ich', 1 ♂, May 6, 1950.

REMARKS. This specimen, which is in the Legters collection, represents the only record from the Peninsula.

The species is rare in Central America and Mexico, although it is so similar in morphology and behavior to *Oncostoma cinereigulare*, it may be overlooked frequently.

ONCOSTOMA CINEREIGULARE CINEREIGULARE (Slater).
Northern Bent-bill.

Todirostrum cinereigulare Slater, Zool. Soc. London, Proc., 24:295, 1856 (–1857).
(Córdoba, Veracruz.)

RANGE. The species occurs from southern Mexico to Panama; the race from Veracruz and Oaxaca southward, including the entire Yucatán Peninsula, to western Panama; *O. c. olivaceum*, of eastern Panama and northern Colombia, often considered specifically distinct.

SPECIMENS. Quintana Roo—Chetumal, 1 ♀, Feb. 25, 1 ♂, May 2, 1 ♂, June 17, 1 ♀, June 20, 1949, 1 ♂, Oct. 25, 1952; 46 km. W. Chetumal, 1 ♂, Feb. 11, 1949; Ucum, 1 ♂, Feb. 22, 1952; Bacalar, 1 ♂, Oct. 27, 1952; Agua Blanca, 1 ♂, June 2, 1 ♂, June 4, 1949; Estero Franco, 1 ♂, Jan. 28, 1949; Carrillo Puerto, 1 ♂, Apr. 15, 1 ♂, May 24, 1 ♀, June 10, 1 ♂, June 12, 1 ♂, June 15, 1950; Tabi, 1 ♀, 1 ♂, Mar. 18, 1949; Ch'ich', 1 ♀, May 9, 1950; Xcan, 2 ♀, Apr. 26, 1949; Kantunil-Kín, 1 ♂, Apr. 24, 1949. Yucatán—Xocempich, 1 ♂, June 24, 1 ♂, June 30, 1952. Campeche—2 km. N. Aguada Seca, 1 ♂, Feb. 7, 1 ♂, Feb. 8, 1951.

HABITAT. Underbrush in rain forest and occasionally in that of deciduous forest.

REMARKS. Brodkorb (1939) proposed the name *O. c. pacifica* for the population of the Pacific lowlands from the Isthmus of Tehuantepec to Costa Rica. The race is said to differ from the nominate form in that the bill is longer and wider and the pileum is much greener. I have examined

a large series of this species, particularly from western Costa Rica, including Miravalles, one of the localities in Brodkorb's type series. I am unable to recognize any characters in the birds from the Pacific slope which are not equally prevalent in specimens from other areas. The size and shape of the bill is variable and birds with considerable green on their heads can be found within the state of Veracruz, only a short distance from the type locality of *O. c. cinereigulare*, as well as in the Pacific lowlands. As Ridgway (1907) noted, the amount of green on the pileum is apparently a function of age and season.

On the Peninsula the species is relatively common in areas of dense thickets. If it were not for its distinctive call, detection would be very difficult and one would be led to believe it a rare form.

BREEDING. The first indications of breeding were noted in mid-March when a male with slightly enlarged testes was collected. Birds in reproductive condition were taken from April to late June. Data from summer birds are lacking.

WEIGHT. Eight males ranged in weight from 5.2 to 6.7 grams, with a mean of 5.96 ± 0.18 . Two females weighed 5.0 and 5.6 grams.

ELAENIA FLAVOGASTER SUBPAGANA Sclater and Salvin.
Yellow-bellied Elaenia.

Elainia subpagana Sclater and Salvin, Ibis, 2:36, 1860. (Dueñas, Guatemala.)

RANGE. The species occurs from southern Mexico to Argentina; the subspecies from Veracruz and Oaxaca to Panama; on the Peninsula in Campeche (Traylor, 1941), Yucatán, and Quintana Roo, including Isla Mujeres.

SPECIMENS. Quintana Roo—Chetumal, 1 ♂, Oct. 30, 1 ♂, 2 ♀, Nov. 2, 1 ♂, Dec. 3, 1948, 1 ♂, May 28, 1952. Yucatán—Xocempich, 1 ♀, Dec. 28, 1949.

HABITAT. Abandoned *milpas* and other open country.

REMARKS. Brodkorb (1943b) restricted the range of *E. f. subpagana* to the Pacific slope from Chiapas to El Salvador and named the remainder of the Middle American population *E. f. saturata*, claiming that it is distinguished by its darker color. However, I am unable to recognize any difference between the populations.

The species appears to be very local on the Peninsula. I saw it only at Chetumal, where it was relatively common from October, when field work was begun, until December. It then disappeared and was not seen again during the remaining seven months of work in the region.

The status of this form on Isla Mujeres is discussed under *E. martinica*.

WEIGHT. Two males and a female weighed 23.6, 25.3, and 24.7 grams, respectively.

ELAENIA MARTINICA REMOTA Berlepsch.
Caribbean Elaenia.

Elaenia martinica remota Berlepsch, Proc. 4th Inter. Ornith. Congress, p. 396, 1907. (Isla Cozumel, Quintana Roo.)

RANGE. The species is present on the Lesser Antilles, on the Cayman Islands, on Old Providence and St. Andrews Islands, on islands off the east coast of the Yucatán Peninsula and British Honduras, and presumably occasionally on the coast of the Peninsula; the race on Islas Cozumel and Mujeres, and probably on Isla Holbox and at Meco, Quintana Roo; sight record from Cayo Culebra (Griscom, 1926a) probably referable to this form; possibly on islands off British Honduras.

SPECIMEN. Quintana Roo—Isla Cozumel, 1 ♀, June 7, 1952.

HABITAT. Mangroves.

REMARKS. Through the courtesy of Mr. J. D. Macdonald I have been permitted to examine eight specimens of this species from Isla Cozumel, three from Isla Mujeres, two from Meco, and one from Isla Holbox. These are all Gaumer-collected birds and are those which were listed by Sclater (1888).

There are slight discrepancies between the months of collection which are printed on the labels of some of the specimens from Meco, Isla Holbox, and Isla Mujeres, and the months during which Gaumer (1917) said he visited the islands. These discrepancies may be insignificant or they may indicate that the specimens were poorly labeled in the field with the resulting possibility that they came from localities other than those printed on the tags. This is another unfortunate case of data collected by Gaumer which are unique but of uncertain validity.

All of the birds labeled as having come from Isla Cozumel, are referable to *E. m. remota*. However, as Salvin (1889) noticed, some of the specimens from the other localities are tinged with yellow below and seem to approach *E. flavogaster*. Peters (1926) has shown that the two species may be more certainly distinguished by structural differences, rather than by color differences alone. *E. flavogaster* has a more triangular bill and a less pointed wing than *E. martinica*. Using these criteria, it is found that one bird, and possibly two, from Isla Mujeres must be identified as *E. flavogaster*, while the remainder from Isla Mujeres and those from Meco and Isla Holbox fall into *E. martinica*. Thus, it appears that *E. martinica* and *E. flavogaster* exist sympatrically on Isla Mujeres and at least contiguously on the mainland. It must be borne in mind, however, that these conclusions are only tentative because of the uncertain nature of the data.

ELAENIA MARTINICA CHINCHORRENSIS Griscom.

Elaenia chinchorrensis Griscom, Am. Mus. Novit., No. 236:3, 1926. (Cayo Centro, Banco Chinchorro, Quintana Roo.)

RANGE. The race is known only from the type locality, and probably on Half Moon Cay, British Honduras (Bond, 1950).

REMARKS. This subspecies was described from the only specimen which could be found on Cayo Centro in 1926 (Griscom, 1926b). During a brief visit to Banco Chinchorro in 1949, every effort was made to rediscover the bird but we were without success. It is probable that it is now extinct.

ELAENIA VIRIDICATA PLACENS Sclater.
Greenish Elaenia.

Elainia placens Sclater, Zool. Soc. London, Proc., 27:46, 1859. (Córdoba, Veracruz.)

RANGE. The species is present from Mexico to Argentina; the race from Tamaulipas southward through Yucatán, Campeche, and Quintana Roo, including Isla Cozumel and, uncertainly, Isla Mujeres (Salvin, 1889), to Guatemala and Honduras; *E. v. jaliscensis* confined to Jalisco and *E. v. pacifica*, of doubtful validity, supposedly ranges in the Pacific lowlands from Chiapas to El Salvador.

SPECIMENS. Quintana Roo—Chetumal, 1 ♀, Jan. 21, 1 ♀, Jan. 22, 1949, 1 ♀, Oct. 26, 1952; 46 km. W. Chetumal, 1 ♂, Feb. 15, 1949; Carrillo Puerto, 1 ♀, June 6, 1 ♂, 1 ♀, June 13, 1 ♂, June 22, 1950; Tabi, 1 ♂, Mar. 30, 1 ♂, Apr. 3, 1953; Ch'ich', 1 ♀, May 6, 1950; Xcan, 1 ♂, Apr. 29, 1949; 15 km. NW. Kantunil-Kín, 1 ♀, 1 ♂, Dec. 12, 1 ♀, Dec. 14, 1950; Isla Cozumel, 1 ♀, Jan. 3, 1949. Yucatán—Xocempich, 1 ♂, Oct. 3, 1950. Campeche—Ichek, 1 ♂, Sept. 25, 1950, 1 ♂, May 23, 1952; 2 km. N. Aguada Seca, 1 ♂, Feb. 6, 1951.

HABITAT. Fields and light forest throughout the Peninsula.

REMARKS. Brodtkorb (1943b) has stated that birds from Yucatán are very slightly paler and larger than those from Veracruz, but I am unable to discern even the slightest difference.

The record from Isla Mujeres (Salvin, 1889) requires verification since the lack of forests on the island makes it appear an unlikely locality for the species.

BREEDING. A bird collected on April 29, which was in full breeding condition, is the only record.

WEIGHT. Males weighed 12.2, 12.7, 13.1, and 13.3; females 11.2 and 11.6 grams.

CAMPTOSTOMA IMBERBE Sclater.
Beardless Flycatcher.

Camptostoma imberbe Sclater, Zool. Soc. London, Proc., 25:203, 1857. (San Andrés-Tuxtla, Veracruz.)

RANGE. A monotypic species which ranges from southern Texas and Arizona to Costa Rica; recorded from throughout the Peninsula, including Isla Cozumel (Salvin, 1889) and Isla Holbox.

SPECIMENS. Quintana Roo—Chetumal, 1 ♂, June 18, 1949, 1 ♀, month?, 1950; Isla Holbox, 1 ♀, Dec. 17, 1950. Yucatán—Mérida, 1 ♂, Oct. 9, 1950; 15 km. N. Mérida, 1 ♀, Mar. 10, 1950. Campeche—Santa Rita, 1 ♂, 1 ♀, Dec. 21, 1949; Ichek, 1 ♂, Apr. 24, 1952.

HABITAT. Second growth, scrub, and light forest, principally in the zone of deciduous forest.

REMARKS. Beardless Flycatchers are uncommon throughout the Peninsula.

BREEDING. The birds collected on April 24 and June 18 had fully enlarged gonads.

WEIGHT. A male weighed 7.3 grams.

PIPROMORPHA OLEAGINEA ASSIMILIS (Sclater).
Ochre-bellied Flycatcher.

Mionectes assimilis Sclater, Zool. Soc. London, Proc., 27:46, 1859. (Córdoba, Veracruz.)

RANGE. The species is distributed from Mexico to Amazonia; the race from Veracruz, through Campeche (Traylor, 1941), Yucatán (Traylor, 1941), and Quintana Roo, including Isla Mujeres, to Costa Rica.

SPECIMENS. Quintana Roo—Chetumal, 1 ♀, Nov. 23, 1948; Agua Blanca, 1 ♂, May 31, 1 ♂, June 1, 2 ♂, June 2, 1 ♂, June 3, 1 ♂, June 5, 1 ♀, June 6, 1949; Isla Mujeres, 1 ♀, Dec. 26, 1950.

HABITAT. The species ranges from the highest rain forest through deciduous forest to insular scrub. It is, however, rare in the deciduous forest and presumably accidental in the insular scrub.

REMARKS. In the vicinity of Agua Blanca, where the forest floor is shaded by immense trees and is nearly free of low vegetation, this species is one of the most common tyrannids. Elsewhere on the Peninsula it seems to be one of the most uncommon.

The presence of this bird on Isla Mujeres is particularly noteworthy. If this record had appeared in a list of specimens collected by Gaumer there would have been little hesitancy in suggesting that it required verification. In the morning of December 26 a single pipromorpha was

seen briefly in the low scrub at the northern end of the island. Its presence on such a small arid island seemed so incongruous it was assumed that an error in identification had occurred. In the afternoon, however, a boy brought in a living pipromorpha which had passed through so many hands the details of its capture were lost. Whether the bird was the one seen earlier in the day is not known, but the fact that it was captured alive suggests that perhaps it was a weakened straggler from the mainland.

BREEDING. All of the birds collected at Agua Blanca in late May and early June exhibited gonadal activity.

WEIGHT. Six males ranged in weight from 12.0 to 13.8 grams, with a mean of 12.73 ± 0.30 . Three females weighed 11.5, 12.6, and 14.2 grams.

Family HIRUNDINIDAE

PROGNE SUBIS SUBIS (Linnaeus).
Purple Martin.

Hirundo subis Linnaeus, Syst. Nat., ed. 10, 1:192, 1758. (Hudson Bay.)

RANGE. The species breeds from southern Canada southward to central Mexico and the Antilles; the race from British Columbia east to Nova Scotia and southward over the entire United States, with the exception of southern Arizona, to Jalisco and possibly Veracruz; winters in South America; fall migration records from Cayos Arcas, Triángulo Oeste, and Arrecife Alacrán, Banco Campeche (Paynter, 1953), and from the mainland of Campeche and Yucatán; spring migration record from Isla Cozumel, Quintana Roo (Salvin, 1888).

SPECIMENS. Yucatán—Santa Clara, 1 ♀, Aug. 23, 1 ♀, 1 ♀, Aug. 26, 1 ♂, Aug. 30, 1950; Xocempich, 1 ♂, Sept. 20, 1952. Campeche—Cayos Arcas, 1 ♀, Aug. 28, 1952, Cayal, 1 ♂, Sept. 21, 1950.

HABITAT. Chiefly coastal and insular.

REMARKS. The species appears to be a rather common transient, although its restricted habitat and the short period it is present on the Peninsula produce a combination which has yielded few observations.

PROGNE CHALYBEA CHALYBEA (Gmelin).
Gray-breasted Martin.

Hirundo chalybea Gmelin, Syst. Nat., 1:1026, 1789. (Cayenne.)

RANGE. The species ranges from Mexico to central Argentina; the race from Nayarit and Tamaulipas to northern Brazil and eastern Peru; on the Peninsula in Yucatán and Quintana Roo.

SPECIMENS. Quintana Roo—Chetumal, 1♂, June 28, 1949; Ucum, 1♂, Feb. 21, 1952; Carrillo Puerto, 2♀, June 9, 1♂, June 17, 1♂, June 20, 1950. Yucatán—Chemax, 1♀, Mar. 20, 1950.

HABITAT. Primarily in the vicinity of towns; occasionally in open country.

REMARKS. There are comparatively few records of this species from the Peninsula, but I have found it quite common near towns, where it nests in eaves and in ruined buildings.

BREEDING. Martins appeared to be nesting in the walls of the church at Carrillo Puerto in the first week of March, but no specimens could be collected or nests examined. The male taken at Chetumal on June 28 had enlarged gonads.

WEIGHT. A male weighed 35.7 grams.

PETROCHELIDON PYRRHONOTA PYRRHONOTA (Vieillot).
Cliff Swallow.

Hirundo pyrrhonota Vieillot, Nouv. Dict. Hist. Nat., nouv. éd., 14:519, 1816. (Paraguay.)

RANGE. The species breeds from Alaska and Cape Breton Island to southern Mexico and possibly Guatemala; the race from the northern limits of the species to the southern United States; winters in Brazil and Argentina; recorded as transient on Isla Cozumel (Salvin, 1888).

REMARKS. Salvin (1888) recorded a single Gaumer-collected specimen from Isla Cozumel. Mr. J. D. Macdonald informed me (*in litt.*) that there are two specimens in the British Museum from Isla Cozumel, one of which was presumably referred to by Salvin (1888). One bird was collected in 1885 and the other in 1886. Gaumer spent the periods from February to June 1885 and from January to August 1886 on the island (Gaumer, 1917) which suggests that the birds were collected during spring migrations.

PETROCHELIDON FULVA CITATA Van Tyne.
Cave Swallow. Golondrina.

Petrochelidon fulva citata Van Tyne, Univ. Mich., Mus. Zool., Occasional Papers, No. 385:2, 1938. (Chichén Itzá, Yucatán.)

RANGE. The species breeds from Texas to northeastern Mexico, on the Yucatán Peninsula, in the Greater Antilles, and in western Peru and southern Ecuador; the race in Quintana Roo and Yucatán.

SPECIMENS. Quintana Roo—Carrillo Puerto, 1♂, Mar. 6, 1949, 1♂, June 8, 1♂, June 9, 1♀, June 22, 1950. Yucatán—Xocempich, 1♀, Sept. 29, 1950, 1♂, Apr. 17, 1♂, July 10, 1♀, Sept. 15, 1♂, Sept. 27, 1952; Santa Clara, 1♂, Sept. 3, 1949, 1♂, Aug. 25, 1950; Conkal, 2♂, Sept. 9, 1950; Celestún, 1♂, Jan. 13, 1951; Uxmal, 2♂, 2♀, Jan. 19, 1951.

HABITAT. Usually found about ruins and *cenotes* in the northern half of the Peninsula.

REMARKS. Many hundreds of Cave Swallows were found in mid-January at Uxmal, where they roosted in the ruins during the night and the warmest part of the day. At Celestún a few were seen flying in association with *Iridoprocne albilinea*.

BREEDING. Several hundred Cave Swallows were inhabiting the crevices in the walls of the church at Carrillo Puerto in March. They appeared to be breeding but no nests were seen and no specimens could be collected. A bird found dead at the church exhibited no indications of breeding. A male taken in Yucatán on April 17 had very enlarged testes.

WEIGHT. Three males weighed 17.8, 19.0, and 19.3 grams. Van Tyne (1938) listed the weights of three males and three females as 18.3, 18.5, 20.2 and 17.0, 17.7, 18.5 grams, respectively.

STELGIDOPTERYX RUFICOLLIS SERRIPENNIS (Audubon).
Rough-winged Swallow.

Hirundo serripennis Audubon, Ornith. Biogr., 4:593, 1838. (Charleston, South Carolina.)

RANGE. The species breeds from southern Canada to central Argentina; the race from British Columbia and New Hampshire over much of the United States to central California, central Texas, and the Gulf states; winters from the southern United States to Panama; on the Peninsula known only from Quintana Roo; *S. r. psammochrous* breeds from southern California and Texas over much of central Mexico to Oaxaca; *S. r. fulvipennis*, doubtfully distinct from *S. r. serripennis*, breeds from Guerrero and Veracruz southward over lower altitudes to Costa Rica; *S. r. ridgwayi* endemic to Yucatán Peninsula; *S. r. stuarti* breeds at high altitudes from southern Veracruz to Guatemala.

SPECIMENS. Quintana Roo—Chetumal, 1♀, Oct. 29, 1952; 10 km. W. Chetumal, 1♀, Nov. 11, 1948; Bacalar, 1♀, Feb. 16, 1952; 15 km. NW. Kantunil-Kín, 1♀, Dec. 13, 1950.

HABITAT. Known from open country in the rain forest zone; to be expected in deciduous zone as well.

REMARKS. The presence of three races of *S. ruficollis* on the Peninsula during the winter months renders it nearly impossible to estimate the abundance of *S. r. serripennis*. The specimens which I have collected were all taken from flocks of not more than 20 birds which were present in areas in which the other two races were never found. Judging from this experience, it would seem that *S. r. serripennis* is not a rare visitant. Any isolated small flocks, particularly south of the zone of deciduous forest, should be scrutinized for this race.

I have examined the specimens collected by Peters (1913) along the Río Hondo and refer them to *S. r. serripennis*.

STELGIDOPTERYX RUFICOLLIS RIDGWAYI Nelson.

Stelgidopteryx ridgwayi Nelson, Biol. Soc. Wash., Proc., 14:174, 1901. (Chichén Itzá, Yucatán.)

RANGE. Endemic to the Yucatán Peninsula; specimens recorded from other regions require redetermination.

SPECIMENS. Quintana Roo—Carrillo Puerto, 1♂, 1♀, Apr. 11, 1949, 1♂, Apr. 29, 1♀, June 8, 2♂, June 9, 1950; Tabi, 1♂, Mar. 9, 1♂, 1♀, Mar. 10, 1949, 1♂, Mar. 25, 1♂, Mar. 30, 1♀, Apr. 2, 1953; Ch'ich', 1♀, May 4, 1950; Xcan, 1♂, Apr. 25, 1949. Campeche—Ichek, 1♀, May 23, 1952.

HABITAT. Primarily within clearings in deciduous forest; occasionally in those of rain forest.

REMARKS. This form is particularly abundant around ruins in Yucatán where flocks of many hundreds are usual. The availability of nesting cites within old buildings is probably responsible for these large concentrations, since in other areas the birds are considerably less numerous.

BREEDING. Nearly all of the specimens collected in March and April were breeding, or approaching breeding condition. There are no data for the remaining specimens.

WEIGHT. Four males weighed 14.8, 15.5, 16.0, and 16.2; two females, 15.3 and 15.4 grams.

STELGIDOPTERYX RUFICOLLIS STUARTI Brodkorb.

Stelgidopteryx ruficollis stuarti Brodkorb, Condor, 44:217, 1942. (Finca Panzamalá, Alta Verapaz, Guatemala.)

RANGE. Breeds from the mountains of southern Veracruz to Alta Verapaz, Guatemala; winters in Yucatán and Campeche, and probably at low altitudes elsewhere.

SPECIMENS. Yucatán—Uxmal, 1♀, Jan. 17, 2♀, Jan. 19, 1951; Xocempich, 1♀, Sept. 29, 1950. Campeche—Ichek, 1♂, Sept. 25, 1950.

HABITAT. Known only from clearings in the zone of deciduous forest.

REMARKS. The collection of these specimens establishes an interesting range extension for the race.

All five specimens are darker dorsally than *S. r. ridgwayi* and have light lores and faintly cream-colored abdomens—the very distinctive characters of *S. r. stuarti*.

At Uxmal there were hundreds of Rough-winged Swallows about the ruins but they were very shy and could be collected with only the greatest

of difficulty. Because no specimens of *S. r. ridgwayi* were taken at Uxmal, the possibility that these flocks consisted solely of the highland race is suggested. However, only three Rough-winged Swallows were secured and the sample is too small for conjecture.

WEIGHT. The three females from Uxmal weighed 13.7, 15.7, and 16.8 grams.

RIPARIA RIPARIA RIPARIA (Linnaeus).
Bank Swallow.

Hirundo riparia Linnaeus, Syst. Nat., ed. 10, 1:192, 1758. (Sweden.)

RANGE. The species occurs throughout much of the Northern Hemisphere; the race in Europe, Asia, and northern Africa, and in the New World from northern Alaska east to southern Labrador and south over all but the extreme southern United States; winters in South America; known as a fall transient on Cayos Arcas and Arrecife Alacrán, Banco Campeche (Paynter, 1953), and as a spring transient on Isla Cozumel, Quintana Roo (Salvin, 1888).

SPECIMENS. Yucatán—Isla Pérez, Arrecife Alacrán, 1♂, Sept. 1, 1952. Campeche—Cayos Arcas, 1♂, 1♀, Aug. 28, 1952.

HABITAT. Known only from insular localities.

REMARKS. The only previous record for the Peninsula of this species, was a single specimen taken in May on Isla Cozumel (Salvin, 1888).

Well over 100 individuals were present on Cayos Arcas in late August and eight were on Isla Pérez in early September.

HIRUNDO RUSTICA ERYTHROGASTER Boddaert.
Barn Swallow.

Hirundo erythrogaster Boddaert, Table Pl. Enl., 45, 1783. (Cayenne.)

RANGE. The species occurs widely in the Northern Hemisphere; the race breeds from Alaska east to Labrador and south to Baja California, Puebla, and the Gulf Coast of the United States; winters primarily in South America and occasionally north to Mexico; transient on the Peninsula in the spring and fall; recorded from Cayos Arcas, Arrecife Triángulos, Cayo Arenas, and Arrecife Alacrán of Banco Campeche (Paynter, 1953), from Yucatán, and from Quintana Roo, including Isla Cozumel (Salvin, 1888), and Cayo Culebra.

SPECIMENS. Quintana Roo—Carrillo Puerto, 1♀, Apr. 10, 1949; Cayo Culebra, 1♀, Apr. 16, 1949. Yucatán—Santa Clara, 1♀, Sept. 2, 1949; Yotzonot, 2♂, Apr. 14, 1952.

HABITAT. Cleared areas on mainland and on islands.

REMARKS. The Barn Swallow appears to be only a transient on the Peninsula during August and September, and April and May.

Many hundreds were present on Banco Campeche in late August and early September 1952, and additional birds were seen over the open sea (Paynter, 1953).

WEIGHT. The female taken on Cayo Culebra was relatively free of fat and weighed 15.5 grams.

IRIDOPROCNE BICOLOR (Vieillot).
Tree Swallow.

Hirundo bicolor Vieillot, Hist. Nat. Ois. Amér. Sept., 1:61, 1808. (New York.)

RANGE. A monotypic species breeding from Alaska east to Newfoundland and south to California, Louisiana, and Virginia; winters from the southern United States to Nicaragua and the Caribbean coast of South America; recorded from Quintana Roo (Griscom, 1926a), Campeche (Lincoln, 1936b), and Yucatán.

SPECIMEN. Yucatán—Santa Clara, 1♀, Mar. 27, 1950.

HABITAT. Apparently confined to coasts.

REMARKS. Tree Swallows appear to be rare, although perhaps local, visitors to the Peninsula. I have never seen the species, the specimen having been collected by Legters. However, Griscom (1926a) reported a large population in the marshes at Chunyaxche, Quintana Roo. The record from Campeche (Lincoln, 1936b) is based on a bird banded as a fledgling on Cape Cod and recovered nine months later at Palizada.

IRIDOPROCNE ALBILINEA ALBILINEA (Lawrence).
Mangrove Swallow.

Petrochelidon albilinea Lawrence, Lyc. Nat. Hist. New York, Ann., 8:2, 1863. (Panama.)

RANGE. The species ranges from Mexico to Panama, and possibly Peru; the race from Tamaulipas and Oaxaca to Panama; on the Peninsula in Campeche (Traylor, 1941), Yucatán, and Quintana Roo, including Isla Holbox, Cayo Culebra (sight record), and, at least formerly, Banco Chinchorro (Griscom, 1926b); *I. a. rhizophorae* from Sonora probably south to Guerrero.

SPECIMENS. Quintana Roo—Estero Franco, 1♂, 1♀, Jan. 25, 1949; Ucum, 1♂, 1♀, Feb. 22, 1952; Vigía Chico, 1♂, Mar. 29, 1♀, Apr. 1, 1949; Isla Holbox, 1♀, Dec. 17, 1950. Yucatán—Santa Clara, 1♀, Sept. 3, 1♀, Sept. 20, 1949, 1♂, Aug. 29, 1♀, Sept. 3, 1950.

HABITAT. Found along the coasts, on large inland bodies of water, and on rivers, often far up-stream; more rarely on islands.

REMARKS. These swallows are common in coastal localities where there are mangroves and shallows. They occur on rivers in smaller numbers, but often a considerable distance from the salt water. At Laguna Chacanbacab they were quite abundant.

There are no records from Isla Cozumel, Isla Mujeres, or Isla Contoy, which is notable since Griscom (1926b) found six birds on Cayo Centro, Banco Chinchorro, a smaller and more isolated land mass. None was seen during my visit to the bank, which, coupled with the absence of the species on the large islands, indicates that their presence so far from the mainland may be accidental.

BREEDING. The male taken at Vigía Chico on March 29 had fully enlarged gonads, but the female collected a few days later showed no indications of breeding.

WEIGHT. One male and two females weighed 13.9, 13.3, and 15.5 grams, respectively.

Family CORVIDAE

PSILORHINUS MEXICANUS VOCIFERUS (Cabot).

White-tipped Brown Jay. Paap.

Corvus vociferus Cabot, Boston Soc. Nat. Hist., Proc., 1:155, 1843. (Yucatán.)

RANGE. The species occurs from Mexico to Panama; the race endemic to the Yucatán Peninsula; *P. m. cyanogenys* ranges from Tabasco and southwestern Campeche through Petén and south to Costa Rica.

SPECIMENS. Quintana Roo—Chetumal, 1 ♂, Nov. 2, 1 ♂, Nov. 4, 1 ♂, Nov. 19, 1 ♂, Dec. 27, 1948, 1 ♂, May 20, 1950; Isla Tamalcab, 1 ♀, Dec. 12, 1948; Bacalar, 1 ♂, Feb. 6, 1 ♂, Oct. 28, 1952; 24 km. NW. Xtocomo, 2 ♀, Feb. 23, 1951; Carrillo Puerto, 1 ♂, June 21, 1950; Tabi, 1 ♂, Mar. 12, 1 ♂, Mar. 14, 1 ♀, Mar. 16, 1949, 1 ♀, May 28, 1953; Ch'ich', 1 ♂, May 5, 1950; Xcan, 1 ♂, Apr. 27, 1949; 15 km. NW. Kantunil-Kin, 1 ♂, Dec. 12, 1 ♂, Dec. 21, 1950. Yucatán—Tmax, 1 ♂, Dec. 8, 1951. Campeche—Champotón, 1 ♀, Jan. 24, 1 ♂, Jan. 25, 1951; 20 km. N. Escárcega.

HABITAT. Most common in rain forest of moderate density and in heavy second growth within that zone; less common in dense rain forest and in deciduous forest.

REMARKS. This race may be distinguished from the other forms by its smaller size, by the sharp demarcation between the brown of the breast and the white of the abdomen, and most easily, by the total lack of gray on the thighs.

Peters (1913) placed his specimens from along the Río Hondo within the form *P. m. cyanogenys*, stating that although the birds were slightly smaller than that race they lacked the pure white underparts of *P. m. vociferus*. I have examined these skins and find that they all lack gray thighs and can be matched, in all characters, by some specimens from Yucatán, the type locality. On the other hand, about half the specimens

from the vicinity of Chetumal have gray, to some extent, on their thighs and their brown chests are less sharply defined. Obviously, the region along the Río Hondo is a zone of intergradation between the two races.

Traylor (1941), without comment, placed specimens from Matamoros and Pacaytun, Campeche, within *P. m. cyanogenys*. The birds from Pacaytun are to be expected to be this form since they occur only a short distance from Tabascan localities where *P. m. cyanogenys* has been collected (Brodkorb, 1943a). Traylor's specimen from Matamoros, which I have not examined, probably is not typical of either race because my single bird from 20 kilometers north of Escárcega, which is about the same distance from Matamoros, only slightly approaches *P. m. cyanogenys*.

Ridgway (1904) stated that the white tips to the rectrices are wider in *P. m. vociferus* than in *P. m. cyanogenys*, while Brodkorb (1943a) believed the reverse to be true. I have measured the white area along the shaft of the outermost rectrix of 14 male *P. m. vociferus* and found it to range from 33.0 to 48.5 millimeters, with a mean of 41.5 ± 1.07 ; in six male *P. m. cyanogenys* it ranged from 32.0 to 43.0 millimeters, with a mean of 37.0 ± 1.52 . The difference between the means is probably not significant ($0.05 < P < 0.02$) and, presuming the sample adequate, it seems that the character does not differ in the two races. The sample of females is too small to be of any value, although it appears that there is no sexual dimorphism in this character.

BREEDING. Several birds taken from March 12 to April 27 were breeding.

WEIGHT. Eight males ranged in weight from 193.6 to 224.3 grams, with a mean of 209.75 ± 3.90 ; five females between 173.2 and 203.2 grams, with a mean of 195.08 ± 3.18 .

PSILORHINUS MEXICANUS CYANOGENYS Sharpe.

Psilorhinus cyanogenys Sharpe, Cat. Bds. Brit. Mus., 3:140, 1877. (Pearl Cay Lagoon, Nicaragua.)

RANGE. The race occurs from Tabasco to Costa Rica; on the Peninsula apparently confined to southwestern Campeche (Traylor, 1941).

XANTHOURA YNCAS MAYA van Rossem. Green Jay. Ses-ib.

Xanthoura luxuosa maya van Rossem, Harvard, Mus. Comp. Zool., Bull., 77:397, 1934. (Río Lagartos, Yucatán.)

RANGE. The species occurs from southern Texas to Honduras, and from Colombia to Bolivia; the race endemic to the Yucatán Peninsula and probably extreme eastern Tabasco; *X. y. centralis* contiguous in southernmost Quintana Roo and in Guatemala; *X. y. cozumelae* endemic to Isla Cozumel.

SPECIMENS. Quintana Roo—Carrillo Puerto, 1 ♂, Apr. 20, 1 ♀, June 17, 1950; Tabi, 1 ♀, Mar. 27, 1953; Kantunil-Kín, 1 ♀, Apr. 23, 1949; 15 km. NW. Kantunil-Kín, 1 ♂, 1 ♀, Dec. 12, 1 ♂, 1 ♀, Dec. 14, 1950; Xcan, 1 ♂, 1 ♀, Apr. 27, 1 ♀, Apr. 28, 1 ♂, Apr. 29, 1949. Yucatán—Sucopó, 1 ♂, Apr. 21, 1949; Xocempich, 1 ♂, Nov. 17, 1 ♂, Oct. 21, 1950; Kimbilá, 1 ♂, May 24, 1951. Campeche—Pueblo Nuevo, 1 ♂, July 19, 1953; Champotón, 1 ♂, Jan. 25, 1951; 2 km. N. Aguada Seca, 1 ♂, Feb. 7, 1 ♂, Feb. 10, 1951.

HABITAT. Common in deciduous forest, heavy second growth, and lighter rain forest; rare in heavy rain forest.

REMARKS. This race is readily separable from *X. y. centralis*, to which it is similar in coloration, on the basis of its smaller size. Although van Rossem (1934) presented comparative measurements for the two forms, he did not indicate the range of variation for each race, thereby causing them to appear to be without over-lap.

In addition to the specimens in this collection, I have examined six of *X. y. maya*, including the type and a topotype, and 13 of *X. y. centralis*, eight of which are topotypes. The wing and tail measurements for these birds are presented below; the bill of *X. y. maya* is smaller than that of *X. y. centralis* but a clearcut difference cannot be found in the linear dimension of the culmen, although a difference in circumference is obvious to the eye.

Character	Race	Sex	N	M	σ_m	Range
Wing	<i>X. y. maya</i>	♂	14	110.85 mm.	0.64	107.0–115.0 mm.
		♀	8	109.00	1.26	101.0–113.0
	<i>X. y. centralis</i>	♂	6	117.33	1.18	113.5–122.5
		♀	2	116.50	—	114.0–119.0
Tail	<i>X. y. maya</i>	♂	13	128.80	1.33	119.0–134.0
		♀	8	122.31	1.51	113.0–127.0
	<i>X. y. centralis</i>	♂	6	134.00	1.58	130.5–141.0
		♀	2	132.00	—	130.0–134.0

BREEDING. There are records of birds with enlarged gonads on April 23 and 29.

WEIGHT. Seven males ranged in weight from 59.3 to 79.0 grams, with a mean of 69.40 ± 2.29 ; four females weighed 60.7, 63.4, 64.6, and 68.0 grams.

XANTHOURA YNCAS CENTRALIS van Rossem.

Xanthoura luxuosa centralis van Rossem, Harvard, Mus. Comp. Zool., Bull., 77:397, 1934. (Secanquim, Alta Verapaz, Guatemala.)

RANGE. The race ranges from northern and eastern Guatemala to Honduras, British Honduras, extreme southern Quintana Roo, and probably Tabasco.

SPECIMENS. Quintana Roo—Bacalar, 1 ♂, Feb. 12, 1 ♂, Feb. 19, 1952; Agua Blanca, 1 ♀, June 4, 1949.

HABITAT. Rain forest.

REMARKS. Green Jays are very uncommon in the southern portion of the Peninsula.

Brodkorb (1943a) has assigned three specimens from eastern Tabasco to *X. y. centralis*. He has presented the measurements for these specimens as follows: wing, two males 110 and 116, and a female 109 millimeters; tail, two males 131 and 135, and a female 124 millimeters. It is evident, from the above table of measurements (p. 215), that these birds are not clearly either *X. y. centralis* or *X. y. maya* but are intermediates with a tendency toward the Peninsular race. This is expected since Brodkorb's specimens came from only 100 kilometers southwest of Matamoros and Aguada Seca, localities where neither Traylor (1941) nor I could detect any trend toward *X. y. centralis*.

BREEDING. The female collected on June 4 had a slightly enlarged gonad.

WEIGHT. The female weighed 67.2 grams.

XANTHOURA YNCAS COZUMELAE van Rossem.

Xanthoura luxuosa cozumelae van Rossem, Harvard, Mus. Comp. Zool., Bull., 77:397, 1934. (Isla Cozumel, Quintana Roo.)

RANGE. Endemic to Isla Cozumel.

REMARKS. This race was described from two birds collected by Gaumer and appears to be known from these specimens alone.

Through the courtesy of Mr. J. D. Macdonald I have borrowed the paratype and have compared it with a large series of jays from the mainland. The race was described as being similar in size to *X. y. maya* but differing from it in being paler on the dorsum, including the head, and in having the blue of the head extending only to the nape, rather than over the hind-neck.

The difference in the color of the back is very faint and equaled by some specimens of *X. y. maya*. The head is light blue, rather than dark blue, but this crops up regularly as an aberrancy in the mainland races. While this character may be consistent in the Cozumel population there

is a strong element of uncertainty with a sample of but two birds from the island. The distribution of the blue on the head is restricted in the specimen I have examined. I have not seen an exactly similar condition in any of the mainland birds, although at times the blue is somewhat reduced while at other times it extends in a wash over part of the back.

Therefore, with the limited material at hand it is necessary to accept the race, but I feel it is very uncertain that additional specimens will confirm the validity of the form.

CISSILOPHA SAN-BLASIANA YUCATANICA (Dubois).
Black-and-blue Jay. Chél.

Cyanocitta yucatanica Dubois, Acad. Roy. Belgique, Bull., 40:13, 1875. (Yucatán.)

RANGE. The species is distributed on the western slope from Nayarit to Guerrero and on the eastern slope from Tabasco through the Yucatán Peninsula to Petén and British Honduras, the two isolated groups often considered distinct species; the race endemic to the Yucatán Peninsula, with the exception of extreme western Campeche, and to British Honduras and Petén; record from Isla Mujeres (Salvin, 1888) requires confirmation.

SPECIMENS. Quintana Roo—Chetumal, 1 ♀, Feb. 24, 1949; 46 km. W. Chetumal, 1 ♂, Feb. 12, 1 ♂, 1 ♀, Feb. 13, 1949; Carrillo Puerto, 1 ♀, Mar. 4, 1949, 1 ♂, Apr. 29, 1 ♀, June 6, 2 ♂, June 9, 1950; Tabi, 3 ♀, Mar. 15, 1949, 1 ♂, Mar. 24, 1953; Tulum, 2 ♂, Jan. 13, 1949. Yucatán—Xocempich, 1 ♂, Sept. 29, 1950, 1 ♀, June 30, 1952; Uxmal, 1 ♂, 1 ♀, Jan. 17, 1951. Campeche—Champotón, 2 ♀, Jan. 22, 1 ♀, Jan. 23, 1951.

HABITAT. Throughout the Peninsula, occasionally including coastal scrub, but most common in the region of deciduous forest.

REMARKS. Although the birds from the eastern and western slopes of Mexico differ markedly in coloration, there appears to be little reason for treating them as distinct species. In fact, it may even be advisable to include *C. melanocyanea* and *C. beecheii* within the species, since none is sympatric and their differences, although spectacular, are probably not the result of major genetic differences.

BREEDING. A bird with a slightly enlarged ovary on March 15 is my only record.

WEIGHT. Three adult males weighed 116.5, 125.5, and 127.8 grams; three adult females 105.4, 117.0, and 118.9 grams; three immature females 108.7, 116.3, and 123.4 grams.

CISSILOPHA SAN-BLASIANA RIVULARIS Brodkorb.

Cissilopha yucatanica rivularis Brodkorb, Auk, 57:547, 1940. (Balancán, Tabasco.)

RANGE. The race occurs in Tabasco and western Campeche.

SPECIMENS. Campeche—2 km. N. Aguada Seca, 3♂, Feb. 8, 1951.

HABITAT. Rain forest.

REMARKS. Only one of the specimens in this series is an adult and useful for subspecific determination. Its measurements indicate that it is either at the upper extreme of *C. s. yucatanica* or at the lower extreme of *C. s. rivularis*. Its placement, therefore, is subjective. Traylor (1941) obtained a specimen at Matamoros which he referred to *C. s. rivularis*. Because Aguada Seca lies between Matamoros and the type locality of *C. s. rivularis*, the specimen must be placed within the Tabascan race.

WEIGHT. The mature male weighed 114.4; the two immature males 104.1 and 106.6 grams.

Family TROGLODYTIDAE

CAMPYLORHYNCHUS ZONATUS RESTRICTUS (Nelson).

Band-backed Wren.

Heleodytes zonatus restrictus Nelson, Auk, 18:49, 1901. (Frontera, Tabasco.)

RANGE. The species occurs from Mexico to Ecuador; the race from southern Veracruz and northern Oaxaca through Tabasco, extreme western Campeche, and northern Guatemala, to British Honduras; known in Campeche from Palizada (Brodkorb, 1943a); the nominate race extends north to Puebla and northern Veracruz and *C. z. vulcanus* from Chiapas to Nicaragua or Honduras.

CAMPYLORHYNCHUS BRUNNEICAPILLUS YUCATANICUS (Hellmayr).

Cactus Wren.

Heleodytes brunneicapillus yucatanicus Hellmayr, Cat. Birds Americas, 7:150, 1934. (Río Lagartos, Yucatán.)

RANGE. The species ranges from the southwestern United States and northeastern Mexico south to Jalisco, Mexico, and Tamaulipas, and on the Peninsula of Yucatán; the race endemic to Yucatán.

SPECIMENS. Yucatán—Santa Clara, 1♀, May 7, 1949, 1♂, Mar. 25, 1♂, July 3, 1♂, Aug. 25, 1♂, 1♀, Aug. 26, 1950, 1♂, 1♀, May 15, 1952; Sisal, 2♀, Jan. 6, 1♂, 2♀, Jan. 7, 2♂, Jan. 9, 1951.

HABITAT. Restricted to the *Opuntia* scrub of the coast.

REMARKS. This species has one of the most restricted ranges of any bird occurring on the Peninsula, although it is very abundant within that range.

BREEDING. Stone (1890) reported finding a nearly completed nest on March 19.

WEIGHT. Three males weighed 34.6, 37.9, and 38.4; four females 29.7, 31.3, 33.5, and 34.5 grams.

THRYOTHORUS LUDOVICIANUS ALBINUCHA (Cabot).
Carolina Wren.

Troglodytes albinucha Cabot, Boston Soc. Nat. Hist., Proc. 2:258, 1847. (Yalahau, Yucatán [= Yalahau, Quintana Roo].)

RANGE. The species ranges from Nebraska and Massachusetts southward through the eastern United States to San Luis Potosí, on the Yucatán Peninsula, in Petén and central Guatemala, and in Nicaragua; the race endemic to the Peninsula and probably Petén; *T. l. subfulvus* known from one locality in central Guatemala and one locality in central Nicaragua.

SPECIMENS. Quintana Roo—Carrillo Puerto, 1♂, 1♀, June 15, 1950; Tabi, 1♂, Mar. 9, 1949, 1♂, Mar. 24, 1953; Ch'ich', 1♂, May 9, 1950. Yucatán—Mérida, 1♂, Oct. 5, 1950; Xocempich, 1♂, Oct. 2, 1♀, Oct. 4, 1950, 1♀, June 20, 1♀, June 23, 1♂, June 24, 1♀, Sept. 15, 1952; Dzidzantún, 1♀, June 14, 1♂, June 29, 1♂, Oct. 1, 1952. Campeche—Ichek, 1♀, Dec. 23, 1949, 1♂, Sept. 26, 1950, 1♂, May 23, 1952.

HABITAT. Undergrowth in deciduous forest; rarely in that of rain forest.

REMARKS. Miller and Griscom (1925) and Griscom (1932) pointed out the similarities between *T. ludovicianus* and *T. albinucha*. There seems to be no reason to continue to maintain them as separate species.

BREEDING. The male taken on March 9 had slightly enlarged gonads.

WEIGHT. A male weighed 15.9 grams.

THRYOTHORUS MACULIPECTUS CANOBRUNNEUS Ridgway.
Spotted-breasted Wren. Saltapared. Xan-cotí.

Thryothorus maculipectus canobrunneus Ridgway, Man. No. Am. Birds, p. 552, 1887. (Temax, Yucatán.)

RANGE. The species is distributed from Tamaulipas through eastern and southern Mexico to Honduras; often considered conspecific with *T. rutilus* of northern South America; the race occurs throughout the Peninsula, and in Petén and northern British Honduras; *T. m. umbrinus* contiguous in Tabasco, Guatemala, and southern British Honduras.

SPECIMENS. Quintana Roo—Chetumal, 1♂, Nov. 6, 1♀, Dec. 11, 1♂, Dec. 23, 1948, 1♀, Feb. 8, 1♀, May 27, 1949; 46 km. W. Chetumal, 1♂, Feb. 12, 1♂, Feb. 14; 24 km. NW. Xtocomo, 1♀, Feb. 24, 2♂, Feb. 26, 1951; Carrillo Puerto, 1♀, Mar. 17, 1♀, Mar. 27, 1♀, Apr. 11, 1949, 1♀, May 24, 1♂, 1♀, June 5, 1♂, June 8, 1♂, June 9, 1♀, June 22, 1950; Tabi, 2♀, Mar. 10, 1♀, Mar. 15, 1♀, 1♀, Mar. 17, 1949, 1♂, Mar. 24, 1♂, Mar. 26, 1♀, Apr. 3, 1953; Ch'ich', 1♀, May 11, 1♀, May 12, 1♂, May 13, 1950; Xcan, 1♂, 1♀, Apr. 25, 1949, 1♂, 1♀, Mar. 21, 1950; Kantunil-Kín, 1♀, Apr. 22, 1♂, 1♀, Apr. 23, 1949. Yucatán—Xocempich, 1♀, May 11, 1949, 1♀, Sept. 29, 1♂, Oct. 3, 1950; Dzidzantún, 1♂, Sept. 4, 1952. Campeche—Ichek, 1♀, Dec. 24, 1949, 1♂, Apr. 21, 1♂, May 23, 1952; 2 km. N. Aguada Seca, 1♂, Feb. 9, 1♀, Feb. 10, 1951.

HABITAT. Underbrush in all types of forest, but most common in deciduous forest.

REMARKS. In his review of the species, Griscom (1930) considered the specimens collected by Peters (1913) in southern Quintana Roo to be referable to *T. m. umbrinus*, although not typical of the race. I have examined those specimens, together with the large series of recently collected birds from the southern part of the Peninsula, and, although it must be admitted that the southern specimens are not typical, it is apparent that they are much closer to *T. m. canobrunneus*. Van Tyne (1935) assigned specimens from central Petén to this race also.

BREEDING. Reproductively active birds have been collected from mid-March through May 23.

WEIGHT. Seven males ranged in weight from 13.3 to 15.0, with a mean of 14.36 ± 0.77 grams; 11 females from 11.9 to 12.8, with a mean of 11.9 ± 0.95 grams.

TROGLODYTES MUSCULUS PENINSULARIS Nelson.
Southern House Wren. Saltapared. Xan-coti.

Troglodytes peninsularis Nelson, Biol. Soc. Wash., Proc., 14:174, 1901. (Progreso, Yucatán.)

RANGE. The species occurs from Mexico through Central America to extreme southern South America, and in the Lesser Antilles; the race, which is doubtfully valid, known only from coastal Yucatán and from two localities in Tamaulipas; *T. m. intermedius* from Oaxaca to Panama, with the exception of the area occupied by *T. m. peninsularis*.

SPECIMENS. Yucatán—Santa Clara, 1 ♂, May 6, 1949, 1 ♂, Sept. 12, 1950.

HABITAT. Coastal scrub and adjacent mangroves.

REMARKS. These two specimens are so unlike one another they raise doubt as to the validity of the race.

The specimen taken on September 12 is in worn plumage and is fully as pale ventrally as the type and three paratypes of *T. m. peninsularis*, which were collected on March 5 and which are also worn. The bird collected on May 6, however, is in fresh plumage and is dark ventrally, matching specimens of *T. m. intermedius* from Chetumal, Xcan, and Xocempich, as well as some from Mexico proper and Central America. It is not as dark as many birds, to be sure, but *T. m. intermedius* exhibits considerable variation in coloration and the specimen from Santa Clara fits well within the range. From this evidence it would appear that *T. m. peninsularis* is a worn and faded phase of *T. m. intermedius*, but the case is not so simple.

It may be argued that if the birds from Progreso are merely worn and faded it is strange that equally worn and faded birds have not been taken

in other parts of the range of *T. m. intermedius*. The two specimens from Tamaulipas, which were referred to *T. m. peninsularis* by Chapman and Griscom (1924) may be just such a case, but I have not examined them and know nothing of the season in which they were collected.

The distribution of *T. m. peninsularis* in Tamaulipas and Yucatán, with no specimens from between, is also very suspicious. Chapman and Griscom (1924) certainly were not justified in stating, without qualification, that the race ranges along the entire Gulf coast. From the lack of records it appears that the species is absent along the coast, although from personal experience on the Peninsula it seems more probable that it is merely very local and in time it will be taken by collectors. There is a specimen in the Legters collection from Arenal, Tabasco, which is apparently the first record of the species in that state. It is clearly referable to *T. m. intermedius*. This record may indicate that *T. m. intermedius* interrupts the distribution of *T. m. peninsularis* along the Gulf coastal plain, unless it is confined to within a few miles of the shoreline. This causes the race to appear even more questionable.

Therefore, on the basis of coloration and distribution, *T. m. peninsularis* seems almost certainly invalid. Nevertheless, when the wing, tail, and culmen measurements of the type series of *T. m. peninsularis*, plus the two Santa Clara specimens, all of which are males, are compared with those of the males from elsewhere on the Peninsula, it is found that the culmens differ significantly, but the wings and tails do not. The culmens of the six specimens of *T. m. peninsularis* range from 16.5 to 17.0 millimeters, with a mean of 16.83 ± 0.20 ; those of eight males of *T. m. intermedius* range from 15.0 to 16.5 millimeters, with a mean of 15.8 ± 0.18 .

Thus, even if the pale color is not a valid character, its slightly longer bill is still sufficient to maintain *T. m. peninsularis*. I am, however, not satisfied with the status of this race and accept it somewhat reluctantly, believing that additional specimens from coastal Yucatán and eastern Mexico will eventually indicate the inadvisability of separating it from *T. m. intermedius*.

BREEDING. The bird collected on May 6 had enlarged gonads.

TROGLODYTES MUSCULUS INTERMEDIUS Cabanis.

Troglodytes intermedius Cabanis, Jour. für Ornith., 8:407, 1860. (San José, Costa Rica.)

RANGE. The race occurs from Tabasco and Oaxaca southward through Yucatán and Quintana Roo to northwestern Panama.

SPECIMENS. Quintana Roo—Chetumal, 1♂, July 3, 1949, 1♂, Mar. 22, 1950; Km. 21, Chetumal-Bacalar Rd., 1♀, June 3, 1952; Bacalar, 1♀, Feb. 15, 1952; Carrillo Puerto, 1♀, May 23, 1♂, June 20, 1950; Xcan, 2♂, Apr. 28, 1949, 1♀, Sept. 29, 1951. Yucatán—Xocempich, 1♂, May 10, 1♂, 1♀, Dec. 5, 1949, 1♀, Oct. 2, 1950, 1♀, May 28, 1♂, Sept. 20, 1952.

HABITAT. Vicinity of human habitations.

REMARKS. Although I have searched for this species continuously, I have found it only in villages or towns. Its behavior is similar to that of *T. aëdon*.

BREEDING. Breeding birds were collected on April 28, May 6, and July 3.

WEIGHT. A male weighed 10.4 grams.

TROGLODYTES MUSCULUS BEANI Ridgway.

Troglodytes beani Ridgway, Biol. Soc. Wash., Proc., 3:21, 1885. (Isla Cozumel, Quintana Roo.)

RANGE. Endemic to Isla Cozumel.

SPECIMENS. Quintana Roo—Isla Cozumel, 1 ♂, Jan. 4, 1 ♂, Jan. 6, 2 ♀, Jan. 7, 1 ♂, June 15, 1949, 1 ♀, June 1, 1950, 1 ♂, Jan. 31, 1 ♂, Feb. 3, 1951.

HABITAT. Underbrush of deciduous forest.

REMARKS. This race, in contrast to the mainland form, is secretive and not found in close proximity to human populations, a characteristic also noted by Griscom (1926b).

WEIGHT. Three males weighed 12.7, 12.9, and 14.3 grams.

HENICORHINA LEUCOSTICTA PROSTHELEUCA (Sclater).

White-breasted Wood-Wren.

Scytalopus prostheleucus Sclater, Zool. Soc. London, Proc., 24:290, 1856 (–1857). (Córdoba, Veracruz.)

RANGE. The species is found from Mexico to Amazonia; the race from Puebla and Veracruz south to Guatemala and British Honduras; on the Peninsula in Campeche and Quintana Roo.

SPECIMENS. Quintana Roo—25 km. W. Chetumal, 1 ♀, Aug. 15, 1950; 46 km. W. Chetumal, 1 ♂, Feb. 18, 1949; 24 km. NW. Xtocomo, 1 ♂, 1 ♀, Feb. 27, 1951; Agua Blanca, 1 ♂, June 4, 3 ♂, June 5, 1 ♂, June 6, 1949. Campeche—2 km. N. Aguada Seca, 1 ♀, Feb. 7, 1 ♀, Feb. 9, 1951.

HABITAT. In undergrowth within the heaviest rain forest on the Peninsula.

BREEDING. The birds collected at Aguada Seca in June were in breeding condition.

WEIGHT. Seven males ranged in weight from 14.7 to 15.8, with a mean of 15.37 ± 0.15 grams. Three females weighed 12.3, 13.2, and 13.8 grams.

UROPSILA LEUCOGASTRA BRACHYURUS (Lawrence).
White-bellied Wren. Saltapared.

Troglodytes brachyurus Lawrence, New York Acad. Sci., Ann., 4:67, 1887. (Temax, Yucatán.)

RANGE. The species ranges from Mexico to Guatemala and British Honduras; the race endemic to the Yucatán Peninsula; *U. l. musicus* probably contiguous across entire base of the Peninsula.

SPECIMENS. Quintana Roo—Chetumal, 1♀, Nov. 30, 1♂, Dec. 6, 1948, 1♂, Mar. 1, 1♀, June 16, 1949, 2♂, 1♀, Oct. 25, 1952; Ucum, 1♂, Feb. 23, 1952; Laguna Chacabacab, 1♂, May 14, 1949. Estero Franco, 1♀, Jan. 26, 1949; Carrillo Puerto, 1♂, Apr. 20, 1♂, June 7, 1♀, June 14, 1♀, June 16, 1♂, June 17, 1♂, June 20, 1950; 5 km. NW. Vigía Chico, 1♂, 1♀, Apr. 8, 1949; Tabi, 1♀, Mar. 9, 1♀, Mar. 15, 1949; Ch'ich', 1♂, May 6, 1950; Kilómetro Cincuenta, 1♂, June 29, 1950; Xcan, 1♂, 1♀, Apr. 23, 1♂, Apr. 25, 1♀, Apr. 27, 1♀, Apr. 28, 1949; 1♀, Mar. 21, 1950. Yucatán—Mérida, 1♂, Oct. 5, 1♂, Oct. 10, 1♂, Oct. 19, 1950; 15 km. N. Mérida, 1♂, Mar. 15, 1950; Kimbilá, 1♂, Mar. 24, 1951; Xocempich, 1♀, Sept. 27, 1♀, Dec. 15, 1950; Santa Clara, 1♀, Mar. 25, 1950. Campeche—Santa Rita, 1♂, Mar. 31, 1951; Ichek, 1♂, Dec. 22, 1949, 1♂, July 20, 1♀, Sept. 26, 1950, 1♂, Apr. 22, 1952; Champotón, 1♂, Jan. 22, 1♀, Jan. 24, 1951; 2 km. N. Aguada Seca, 1♀, Feb. 6, 1♂, Feb. 7, 1♂, Feb. 9, 1951.

HABITAT. Distributed throughout the Peninsula from coastal scrub to the highest rain forest. Most common in thickets within forest of moderate height.

BREEDING. Specimens with enlarged gonads have been collected from April 8 to May 14. The pair of birds collected on April 8 was working about a completed retort-shaped nest in an acacia. The nest is exactly comparable to that described by Sutton (1948). The nest was not observed from the inception of construction, leaving the possibility that the birds were merely repairing a nest made by another species, but this suggestion appears spurious.

WEIGHT. Ten males ranged in weight from 9.8 to 10.5, with a mean of 9.55 ± 0.30 grams. Seven mature females weighed from 8.0 to 9.1 with a mean of 8.51 ± 0.07 grams, and a young female weighed 11.3 grams.

Family MIMIDAE

TOXOSTOMA LONGIROSTRE GUTTATUM (Ridgway).
Cozumel Thrasher.

Harporhynchus guttatus Ridgway, Biol. Soc. Wash., Proc., 3:21, 1885. (Isla Cozumel, Quintana Roo.)

RANGE. The species is found from southern Texas through eastern Mexico to Veracruz, and on Isla Cozumel, Quintana Roo; the race endemic to Isla Cozumel and usually considered specifically distinct.

SPECIMENS. Quintana Roo—Isla Cozumel, 1♂, Jan. 6, 1♀, Jan. 10, 1949, 1♂, Jan. 31, 1♀, Feb. 1, 1♂, Feb. 2, 1951, 1♂, 1♀, June 5, 1952.

HABITAT. Thick undergrowth bordering fields.

REMARKS. This isolated form has long been treated as an endemic species, although it differs from *T. longirostre* merely by being smaller and in having several minor color and pattern dissimilarities. It certainly warrants only subspecific rank.

It is a fairly abundant species on the island, but excessively shy and difficult to collect.

WEIGHT. A male and a female weighed 49.0 and 59.8 grams respectively.

DUMETELLA CAROLINENSIS (Linnaeus).
Catbird.

Muscicapa carolinensis Linnaeus, Syst. Nat., ed. 12, 1:328, 1766. (Virginia.)

RANGE. A monotypic species breeding from southern Canada through much of the United States and the Bahamas; winters from the southern United States to Panama and Colombia; on the Peninsula recorded from Campeche (Traylor, 1941), Yucatán, and Quintana Roo, including Islas Holbox, Mujeres, Cozumel (Salvin, 1888), and Contoy (sight record), and Banco Chinchorro (Griscom, 1926b).

SPECIMENS. Quintana Roo—Chetumal, 1♂, Nov. 4, 1♂, Nov. 18, 1948, 1♀, Feb. 5, 1952; Bacalar, 1♂, Oct. 28, 1952; Carrillo Puerto, 1♀, —, 1949. Yucatán—Xocempich, 1♂, Oct. 10, 1951; Mérida, 1♂, Oct. 20, 1950.

HABITAT. Thickets throughout the Peninsula and its islands.

REMARKS. The Catbird is a common winter visitor.

WEIGHT. Two males weighed 34.0 and 40.6 grams.

DUMETELLA GLABRIROSTRIS GLABRIROSTRIS (Sclater).
Black Catbird.

Melanoptila glabrirostris Sclater, Zool. Soc. London, Proc., 25:275, 1857(–1858). (Omoa, Honduras.)

RANGE. The species ranges from Yucatán, Campeche, and Quintana Roo, including Islas Mujeres (Salvin, 1888), Holbox (Salvin, 1888), and Cozumel, and Cayo Culebra (sight record), to Petén, British Honduras, and northern Honduras; the race throughout the range with the exception of Isla Cozumel which is occupied by *D. g. cozumelana*.

SPECIMENS. Quintana Roo—Chetumal, 1♂, Nov. 5, 1♀, Nov. 16, 2♀, 1♀, Dec. 10, 1♂, Dec. 17, 1♀, Dec. 21, 1948; 24 km. NW. Xtocomo, 1♀, Feb. 5, 1952; Carrillo Puerto, 1♀, Apr. 20, 1950; Ch'ich', 1♂, May 12, 1950. Yucatán—Xocempich, 1♂, Jan. 12, 1951. Campeche—2 km. N. Aguada Seca, 1♀, Feb. 9, 1951.

HABITAT. Thickets, primarily in the zone of deciduous forest; very rarely in rain forest.

REMARKS. In morphology and behavior this species is simply a black representative of *D. carolinensis* and certainly does not deserve full generic rank.

Although the species is one of the most abundant birds on Isla Cozumel, it is local on the mainland, appearing only where there is deciduous undergrowth which occurs naturally or after the destruction of the rain forest. The vicinity of Chetumal, with its many abandoned *milpas*, is particularly well-suited and the bird is almost as common here as on Isla Cozumel. Elsewhere on the Peninsula it is excessively rare. I have never observed it on Islas Mujeres or Holbox.

WEIGHT. The weight of two males was 36.8 and 38.1 grams; three females 31.6, 35.3, and 36.1 grams.

DUMETELLA GLABRIROSTRIS COZUMELANA Paynter.

Dumetella glabrirostris cozumelana Paynter, Yale Peabody Mus., Postilla, No. 18:3, 1954. (Isla Cozumel, Quintana Roo.)

RANGE. Endemic to Isla Cozumel, Quintana Roo.

SPECIMENS. Quintana Roo—Isla Cozumel, 1 ♂, Jan. 3, 1 ♂, Jan. 5, 2 ♂, 1 ♀, Jan. 6, 1 ♀, Jan. 12, 1949, 1 ♂, Feb. 2, 1951, 1 ♂, June 5, 1 ♂, June 7, 1952.

HABITAT. Undergrowth of deciduous forest.

REMARKS. Ubiquitous.

WEIGHT. Four males weighed 39.4, 40.3, 40.3, and 41.8 grams.

MIMUS GILVUS LEUCOPHAEUS Ridgway.
Tropical Mockingbird. Sinsontle. Chico.

Mimus gilvus leucophaeus Ridgway, U. S. Nat'l Mus., Proc., 10:506, 1888. (Isla Cozumel, Quintana Roo.)

Mimus gilvus clarus van Rossem, Harvard, Mus. Comp. Zool., Bull., 77:401, 1934. (Camp Mengel [= Alvaro Obregón], Quintana Roo.)

RANGE. The species ranges from southern Mexico to Brazil, and in the Lesser Antilles; the race throughout the Yucatán Peninsula, including Islas Cozumel, Mujeres, and Holbox, to British Honduras, and possibly Tabasco; *M. g. gracilis* from Oaxaca and southern Veracruz through Guatemala to Honduras and El Salvador.

SPECIMENS. Quintana Roo—Chetumal, 1 ♀, Oct. 30, 1 ♂, Nov. 2, 1 ♂, Dec. 21, 1 ♀, Dec. 24, 1948, 1 ♂, Jan. 22, 1949, 1 ♀, May 26, 1 ♂, May 29, 1950; Carrillo Puerto, 2 ♀, Apr. 14, 1950; Isla Cozumel, 1 ♂, Jan. 9, 1949; Isla Mujeres, 2 ♀, Dec. 22, 1 ♂, Dec. 23, 1950; Isla Holbox, 3 ♂, 1 ♀, Dec. 17, 1950. Yucatán—El Cuyo, 2 ♂, Dec. 9,

1♂, 1♀, Dec. 10, 1950; Dzidzantún, 1♂, Apr. 16, 1952; Santa Clara, 1♀, Dec. 6, 1950, 1♂, June 27, 1952; Sisal, 1♂, Jan. 6, 1♂, Jan. 7, 1♂, Jan. 9, 1951; Mérida-Progreso Rd., 1♂, Sept. 7, 1950. Campeche—Champotón, 1♂, Jan. 28, 1951.

HABITAT. Abundant in the coastal scrub of Yucatán and in the vicinity of villages and towns throughout the Peninsula, with the exception of the northern coastal region; rare in uninhabited areas.

REMARKS. Van Rossem (1934), after ascertaining that the name *M. g. gracilis* was applicable to the southern Mexico and Central America race rather than to the Peninsular population, named the birds of the mainland of the Peninsula *M. g. clarus*, believing them separable from those of Isla Cozumel, which already bore the name *M. g. leucophaeus*. The species is highly polymorphic and I am unable to recognize any consistent difference in coloration, which van Rossem (1934) claimed to be the distinguishing character, between the insular and the mainland specimens.

A reduction or absence of white edgings on the feathers of the wings was said (van Rossem, 1934) to be one of several characters shared by *M. g. clarus* and *M. g. leucophaeus*, and which distinguishes them from the birds of southern Mexico and Central America. However, the white borders are very fragile and are readily abraded. They are fully intact only in birds taken in the early fall—a season in which little collecting has been done on the Peninsula. The type of *M. g. clarus* was collected in mid-March and consequently is nearly devoid of white wing markings. When unworn Peninsular specimens are compared with those from Central America, no appreciable difference in the amount of white can be found.

In general, *M. g. leucophaeus* has a greater area of white on its outer rectrices than *M. g. gracilis*, but this is an exceedingly variable character. Brodtkorb (1943a) examined an old specimen from Montecristo (= E. Zapata), Tabasco, and because it is badly soiled he was forced to neglect the coloration of the back—the best character for distinguishing the two races—and to attempt to identify the specimen by means of its rectrices. The specimen was identified as *M. g. leucophaeus*, but the character employed is one which should not be used alone. The presence of this race in Tabasco needs to be confirmed with fresh material.

BREEDING. The birds taken at Chetumal on May 26 and 29 are juvenals just able to fly.

WEIGHT. Fifteen males ranged from 48.0 to 58.7, with a mean of 53.00 ± 0.80 grams; six females from 42.7 to 52.4, with a mean of 48.68 ± 1.44 grams. The difference between the means is statistically significant ($P < 0.01$).

Family TURDIDAE

TURDUS MIGRATORIUS ACHRUSTERUS (Batchelder).
Robin.

Merula migratoria achrustera Batchelder, New Eng. Zool. Club, Proc., 1:104, 1900. (Raleigh, North Carolina.)

RANGE. The species breeds from northwestern Alaska east to Newfoundland and south to Oaxaca; the race breeds from Maryland and Illinois south to Alabama and South Carolina; winters south to Florida, rarely to western Cuba, and possibly regularly to northern Yucatán and Isla Holbox, Quintana Roo.

SPECIMENS. Quintana Roo—Isla Holbox, 1♂, Dec. 19, 1♀, Dec. 20, 1950. Yucatán—Santa Clara, 1♂, Jan. 12, 1952.

HABITAT. One occurrence in coastal scrub and several in a similar habitat on Isla Holbox.

REMARKS. These specimens constitute a new record for the Peninsula and are apparently the only known occurrence of the race in Mexico.

The wings of both males measure 130.0 and that of the female 121.0 millimeters. Only one rectrix is present on the Santa Clara bird, but the tails of the male and female from Isla Holbox measure 96.0 and 88.0 millimeters, respectively.

Previously (Paynter, 1952) I expressed hesitancy in assigning the Holbox birds to *T. m. achrusterus*, in spite of their small size, because they exhibit only a small amount of white on their outer rectrices. The more recently collected Santa Clara bird, however, has a sizable patch of white and is without doubt referable to that race.

Recently I examined a larger series of *T. m. achrusterus* than was available to me heretofore. A few individuals were found to have as little white on their rectrices as the Holbox specimens. Thus, it now appears completely justifiable to consider the insular birds examples of *T. m. achrusterus*.

In addition to the specimens collected on Isla Holbox another was seen in the center of the village. The Santa Clara bird is from the Legters collection and nothing is known of the presence of other individuals.

WEIGHT. The Holbox male and female weighed 73.6 and 61.9 grams respectively.

TURDUS NUDIGENIS TAMAULIPENSIS (Nelson).
Clay-colored Robin. Ruiseñor. Xk'ok'.

Merula tamaulipensis Nelson, Auk, 14:75, 1879. (Victoria, Tamaulipas.)

RANGE. The species occurs from Mexico to Brazil; population from Mexico to northern Colombia often considered specifically distinct (*T.*

grayi); the race ranges along the coastal plain from Tamaulipas and Nuevo León through Veracruz, Tabasco, Petén, and the entire Peninsula; records from Islas Mujeres and Cozumel, Quintana Roo (Salvin, 1888) require confirmation; *T. n. grayi* in the highlands from Veracruz through southern Mexico, eastern Guatemala, and British Honduras south to Nicaragua.

SPECIMENS. Quintana Roo—Laguna Chacabacab, 1 ♀, Feb. 15, 1951; Bacalar, 1 ♂, Feb. 6, 1 ♂, Feb. 10, 1952; Carrillo Puerto, 1 ♀, Apr. 4, 1949, 1 ♂, June 8, 1950; Tabi, 1 ♂, Mar. 11, 1 ♂, Mar. 15, 1 ♂, Mar. 16, 1949, 1 ♂, Apr. 4, 1953; 15 km. NW. Kantunil-Kin, 1 ♂, Dec. 12, 1 ♂, 1 ♀, Dec. 14, 1950. Yucatán—Sucopó, 1 ♂, Apr. 21, 1949; Xocempich, 1 ♂, Jan. 3, 1950, 1 ♂, July 2, 1952. Campeche—2 km. N. Aguada Seca, 1 ♂, 1 ♀, Feb. 5, 1 ♀, Feb. 8, 1 ♂, Feb. 9, 1951.

HABITAT. Cleared areas and forest edges; most abundant in the deciduous forest zone.

REMARKS. The birds from the northern part of the Peninsula are generally referable to *T. n. tamaulipensis*, although a few individuals are dark and approach *T. n. grayi*. For example, the two males collected near Kantunil-Kin are good representatives of *T. n. tamaulipensis* but the female from the same locality is dark and quite close to topotypes of *T. n. grayi*.

The specimens from Bacalar, Laguna Chacabacab, and particularly those from Aguada Seca, exhibit a distinct trend toward *T. n. grayi* but are closer to *T. n. tamaulipensis*. Peters (1913) had two specimens from along the Río Hondo which he placed in *T. n. grayi*. However, I have examined these birds and consider them to be merely approaching that race.

This thrush, the local counterpart of *T. migratorius*, is fairly common in Yucatán where there are towns and much cultivation. In Quintana Roo and Campeche it is very local and absent from many apparently suitable habitats.

Gaumer (Salvin, 1888) is the only collector to record the species on Islas Cozumel and Mujeres. The fact that such a conspicuous bird has not been recorded again is suspicious and suggests the possibility that Gaumer's specimens were escaped cage birds or were collected on the mainland.

WEIGHT. Eight males ranged in weight from 65.6 to 76.6 grams, with a mean of 71.31 ± 5.8 . Four females weighed 62.0, 67.7, 74.5, and 83.0 grams.

Two females and a male of *T. n. grayi*, from the vicinity of Tuxtla-Gutiérrez, Chiapas, weighed 91.8, 92.7, and 92.2 grams, respectively.

Thus it seems that the two races may be distinguished by a substantial difference in weight, although, as Lowery and Newman (1949) have shown, their linear measurements do not differ significantly.

CATHARUS MUSTELINUS (Gmelin).
Wood Thrush.

Turdus mustelinus Gmelin, Syst. Nat., 1:817, 1789. (New York.)

RANGE. A monotypic form which breeds in southeastern Canada and over most of the eastern United States; winters from central Mexico to Panama; on the Peninsula in Campeche (Traylor, 1941), including a transient on Triángulo Oeste, Banco Campeche (Paynter, 1953), Yucatán, and Quintana Roo, including Islas Mujeres and Cozumel (Salvin, 1888).

SPECIMENS. Quintana Roo—Chetumal, 1♂, Dec. 31, 1948; Bacalar, 1♀, Feb. 15, 1952; 15 km. NW. Kantunil-Kín, 1♀, Dec. 14, 1950. Yucatán—Temax, 1♂, Oct. 21, 1951.

HABITAT. Wooded areas; appears more abundant in rain forest than in deciduous forest.

REMARKS. Wood thrushes are fairly common visitants.

WEIGHT. The December male and female weighed 45.9 and 49.0 grams, respectively.

CATHARUS USTULATUS USTULATUS (Nuttall).
Olive-backed Thrush.

Turdus ustulatus Nuttall, Man. Ornith. U. S. and Canada, Land Birds, ed. 2, 1:vi, 400, 830, 1840. (Fort Vancouver, Washington.)

RANGE. The species breeds over much of Canada and the northern United States; the race breeds from western Alaska south to California; winters in Middle America; on the Peninsula, two records from Matamoros, Campeche (Traylor, 1941).

CATHARUS USTULATUS SWAINSONI (Tschudi).

Turdus swainsoni (Cabanis Ms.) Tschudi, Faun. Peru., Aves, p. 28, 1845. (Carlton House, Saskatchewan.)

RANGE. The race breeds over much of Canada and Alaska, and in the northern United States; winters in South America; presumably a transient in Yucatán.

SPECIMEN. Yucatán—Xocempich, 1♀, Dec. 6, 1949.

REMARKS. This specimen, which was collected by Legters, represents the first record of the race from the Peninsula. Griscom (1932) pointed out that there is no evidence that the race winters in Middle America, but the late date of this specimen, and the fact that Dickey and van Rossem (1938)

recorded a specimen on February 25 in El Salvador, suggests it may be a rare winter resident.

CATHARUS MINIMUS MINIMUS (Lafresnaye).
Gray-cheeked Thrush.

Turdus minimus Lafresnaye, Rev. Zool., 11:5, 1848. (Bogotá, Colombia.)

RANGE. The species breeds in northeastern Siberia and over much of Alaska and Canada, and in the northeastern United States; the race over the entire range, with the exception of southeastern Canada and the northeastern United States, which is occupied by *C. m. bicknelli*; the nominate form winters in northern South America; *C. m. bicknelli* known to winter only in Hispaniola; *C. m. minimus* once recorded in spring in Campeche (Wallace, 1939); spring record from Isla Cozumel, Quintana Roo (Salvin, 1888) not subspecifically determinable (Wallace, 1939).

CATHARUS FUSCESCENS FUSCESCENS (Stephens).
Veery.

Turdus fuscescens Stephens, in Shaw, Gen. Zool., 10:182, 1817. (Pennsylvania.)

RANGE. The species breeds over much of southern Canada and the northern and central United States; the race in southeastern Canada and the eastern United States; winters in South America; one (spring?) record from Isla Cozumel, Quintana Roo (Salvin, 1888), one fall sight record from Cayos Arcas, Banco Campeche (Paynter, 1954), and one fall record from Yucatán.

SPECIMEN. Yucatán—Xocempich, 1 ♀, Sept. 26, 1952.

Family SYLVIIDAE

POLIOPTILA CAERULEA DEPPEI van Rossem.
Blue-gray Gnatcatcher.

Poliophtila caerulea deppei van Rossem, Harvard, Mus. Comp. Zool., Bull., 77:402, 1934. (Río Lagartos, Yucatán.)

RANGE. The species is distributed from New Jersey, Ontario, Colorado, and California southward to Guatemala; the race from San Luis Potosí through eastern Mexico, including the entire Peninsula; *P. c. cozumulae* endemic to Isla Cozumel; *P. c. nelsoni* in Oaxaca, Chiapas, and northwestern Guatemala.

SPECIMENS. Quintana Roo—Chetumal, 1♂, Dec. 27, 1948, 1♂, Aug. 13, 1950; Carrillo Puerto, 1♀, Apr. 11, 1949, 1♂, May 8, 1♂, June 5, 1♂, 1♀, June 17, 1950; Tabi, 1♀, Mar. 12, 1949; 15 km. NW. Kantunil-Kín, 1♀, Dec. 13, 1950. Yucatán—Mérida, 1♀, Oct. 5, 1♂, 1♀, Oct. 19, 1950; Xocempich, 1♂, Dec. 6, 1949; Dzidzantún, 1♂, Apr. 27, 1952; Yobaín, 1♀, Jan. 16, 1950. Campeche—Ichek, 1♂, Apr. 25, 1952; Champotón, 1♂, Jan. 22, 1951; 2 km. N. Aguada Seca, 1♂, Feb. 5, 1951.

HABITAT. Low brush throughout the region.

REMARKS. This race is distinguished from the nominate form only by its slightly smaller size.

P. c. caerulea is believed to winter through eastern Mexico to Guatemala. This is no doubt correct, but I consider subspecific identification of winter birds too uncertain to warrant an attempt to separate northern visitants from Peninsular residents. Therefore, the entire series is referred to *P. c. deppei*, although a few winter specimens are a little larger than the summer birds and possibly are examples of *P. c. caerulea*.

BREEDING. A specimen taken on April 11 with a slightly enlarged ovary and one taken on April 27 with fully developed testes are the only records available.

WEIGHT. Three winter males weighed 4.6, 5.5, and 5.8 grams, two winter females 5.3 and 5.5 grams, and a female about to breed 6.2 grams.

POLIOPTILA CAERULEA COZUMELAE Griscom.

Polioptila caerulea cozumelae Griscom, Am. Mus. Novitates, No. 236:10, 1926. (Isla Cozumel, Yucatán [= Quintana Roo].)

RANGE. Endemic to Isla Cozumel.

SPECIMENS. Quintana Roo—Isla Cozumel, 1♂, 1♀, Jan. 4, 1♂, 1♀, Jan. 6, 1♂, 2♀, Jan. 15, 1949.

HABITAT. Brushy areas.

REMARKS. I am unable to distinguish any difference in linear measurements between this race and the mainland form. Its darker color, however, is very distinctive.

Griscom (1926b) reported seeing two races of *P. caerulea* on Isla Cozumel in February, although he collected only the endemic. I doubt, however, that the races can be distinguished in the field and await proof before acknowledging that another race winters on the island.

WEIGHT. The insular race may average slightly lighter in weight than *P. c. deppei*, but the specimens weighed on the mainland were taken during the winter, and because there is an element of doubt as to whether they were resident or visitant birds, this is only a tentative conclusion.

Three males weighed 4.5, 4.8, and 5.0 grams; four females 4.4, 4.4, 4.8, and 5.0 grams.

POLIOPTILA ALBILORIS ALBIVENTRIS Lawrence.
White-lored Gnatcatcher.

Polioptila albiventris Lawrence, New York Acad. Sci., Ann., 3:273, 1885. (Temax, Yucatán.)

RANGE. The species ranges from Mexico to Costa Rica; the race endemic to Yucatán; hypothetical record from Isla Cozumel (Salvin, 1888); *P. a. vanrossemi* occurs from Nayarit through the western lowlands to central Chiapas.

SPECIMENS. Yucatán—Sisal, 1♂, Jan. 6, 2♂, Jan. 7, 1951; Santa Clara, 1♂, Aug. 26, 1950; 15 km. N. Mérida, 1♂, Mar. 10, 1950; Celestún, 1♂, 1♀, Jan. 10, 1♂, 2♀, Jan. 13, 1951.

HABITAT. Found almost exclusively in the arid scrub of coastal Yucatán; occasionally a few kilometers inland in low deciduous forest.

REMARKS. This species is distributed through Mexico and Central America in areas of comparative aridity.

Gaumer (Salvin, 1888) supposedly collected two specimens on Isla Cozumel but I agree with Brodkorb (1944, p. 312) who said, "This record, . . . , is perhaps open to doubt, since no subsequent collector has found the black-capped species on Cozumel."

WEIGHT. Six males ranged in weight from 5.4 to 6.2 grams, with a mean of 5.7 ± 0.33 . Three females weighed 5.0, 5.6, and 5.7 grams.

These weights are considerably lighter than those of a series of *P. a. vanrossemi* I collected in southern Oaxaca and central Chiapas. Five males and a female weighed 6.5, 6.7, 6.8, 7.0, 8.1, and 6.7 grams, respectively.

POLIOPTILA PLUMBEA SUPERCILIARIS Lawrence.
Tropical Gnatcatcher.

Polioptila superciliaris Lawrence, Lyc. Nat. Hist. New York, Ann., 7:304, 1861. (Lion Hill, Panama.)

RANGE. The species occurs from southern Mexico to Peru and Brazil; the race from Quintana Roo and southern Campeche through Central America to Panama.

SPECIMENS. Quintana Roo—Chetumal, 1♀, Feb. 24, 1♀, June 18, 1949; 24 km. NW. Xtocomo, 1♀, Feb. 24, 1951; Tabi, 1♀, Apr. 3, 1953; Xcan, 1♂, Apr. 25, 1949; 15 km. NW. Kantunil-Kín, 1♀, Dec. 12, 1950. Campeche—2 km. N. Aguada Seca, 1♂, Feb. 6, 1951.

HABITAT. Undergrowth within the zone of rain forest.

REMARKS. This species had been known previously on the Peninsula from a single specimen secured along the Río Hondo (Peters, 1913).

It is evident that the range of *P. caerulea* overlaps the ranges of *P. plumbea* and of *P. albiloris*, but the latter two are in no place sympatric. I have been unable to distinguish any difference in habitat preference between *P. caerulea* and *P. plumbea* within their zone of overlap. On several occasions both species have been collected in the same patch of underbrush, although not on the same day.

BREEDING. Females taken on February 24 and June 18 had slightly enlarged ovaries.

WEIGHT. The weight of two males was 4.8 and 5.8 grams; that of four females 4.9, 5.0, 5.1, and 6.5 grams.

RAMPHOCAENUS RUFIVENTRIS ARDELEO Van Tyne and Trautman.
Long-billed Gnatwren.

Ramphocaenus rufiventris ardeleo Van Tyne and Trautman, Univ. Mich., Mus. Zool., Occasional Papers, No. 439:9, 1941. (Chichén Itzá, Yucatán.)

RANGE. The species ranges from southeastern Mexico to Colombia and Ecuador; the race in Campeche (Traylor, 1941), Yucatán, Quintana Roo, and Petén; the nominate form from Veracruz and Oaxaca south to Panama.

SPECIMENS. Quintana Roo—Chetumal, 1♀, Dec. 18, 1♀, Dec. 22, 1948, 1♀, Mar. 1, 1♂, May 27, 1949; Bacalar, 1♂, Feb. 17, 1♀, Oct. 28, 1952; 46 km. W. Chetumal, 1♀, Feb. 14, 1949; Agua Blanca, 1♂, June 1, 1949; Laguna Chacanbacab, 1♂, May 17, 1949; Carrillo Puerto, 1♀, Mar. 21, 1949; Ch'ich', 1♂, May 4, 1950.

HABITAT. Dense undergrowth in both rain and deciduous forests, but most common in the former.

REMARKS. Gnatwrens are common within heavy brush in high rain forest, but they are difficult to see and are much more frequently heard.

BREEDING. The male taken on May 17 had slightly enlarged testes and those taken on May 27 and June 1 had fully enlarged gonads.

WEIGHT. The three reproductively active males weighed 9.0, 9.1, and 9.6 grams. Five females ranged from 8.1 to 9.6 grams, with a mean of 8.78 ± 0.69 grams.

Family MOTACILLIDAE

ANTHUS SPINOLETTA RUBESCENS (Tunstall).
American Pipit.

Alauda rubescens Tunstall, Ornith. Brit., p. 2, 1771. (Pennsylvania.)

RANGE. The species breeds over much of the northern hemisphere; the race over most of Canada and south in the Rocky Mountains to New Mexico; also in Greenland and northeastern Siberia; winters from the United States to Guatemala; one record from Yucatán (Traylor, 1941).

Family BOMBYCILLIDAE

BOMBYCILLA CEDRORUM Vieillot.
Cedar Waxwing.

Bombycilla cedrorum Vieillot, Hist. Nat. Amér. Sept., 1:88, 1808. (Eastern North America.)

RANGE. A monotypic species which breeds in southern Canada and over much of the United States; winters from the United States to Panama; on the Peninsula in Yucatán and Quintana Roo, including Cayo Centro, Banco Chinchorro (Griscom, 1926b) and Isla Cozumel (Salvin, 1888).

SPECIMENS. Quintana Roo—Tabi, 1 ♀, Mar. 12, 1949. Yucatán—Chichén Itzá, 1 ♀, Feb. 12, 1951.

HABITAT. All of the records are from deciduous forest or coastal and insular localities.

REMARKS. This is a very uncommon winter visitant. In addition to the above records there is one from Xcalac, Quintana Roo (Paynter, 1950a) and one from Izalam, Yucatán (Boucard, 1883).

WEIGHT. The female weighed 26.8 grams.

Family VIREONIDAE

CYCLARHIS GUJANENSIS YUCATANENSIS Ridgway.
Rufous-browed Pepper-Shrike.

Cyclorhis flaviventris yucatanensis Ridgway, U. S. Nat'l Mus., Proc., 9:519, 1886. (Mérida, Yucatán.)

RANGE. The species ranges from Mexico to Argentina; the race endemic to Yucatán, Quintana Roo, Campeche, and probably northern Petén and British Honduras; *C. g. flaviventris*, ranging from Mexico to Honduras, probably contiguous; *C. g. insularis* confined to Isla Cozumel.

SPECIMENS. Quintana Roo—Chetumal, 1 ♀, Nov. 16, 1 ♂, Dec. 27, 1948, 1 ♀, Jan. 20, 1949; Carrillo Puerto, 1 ♀, Apr. 13, 1949, 1 ♀, June 6, 1 ♂, June 20, 1950; Tabi, 2 ♀, Mar. 11, 1 ♀, Mar. 14, 1949. Yucatán—Xocempich, 2 ♂, Sept. 20, 1950, 1 ♂, Apr. 16, 1952; 20 km. E. Sucopó, 1 ♀, Apr. 22, 1949; Temax, 1 ♂, Dec. 20, 1951, 1 ♂, Jan. 16, 1952; Dzidzantún, 1 ♂, Oct. 14, 1952. Campeche—Ichek, 1 ♀, Dec. 23, 1949.

HABITAT. Particularly numerous in thinned forest in the vicinity of towns, principally in the zone of deciduous forest.

BREEDING. A male with fully developed testes was taken on April 16 and a female with a slightly enlarged ovary on April 22.

WEIGHT. A male weighed 32.3 grams and five females had a mean of 30.60 ± 0.82 , with a range from 28.8 to 33.1 grams.

CYCLORHIS GUJANENSIS INSULARIS Ridgway.

Cyclorhis isularis Ridgway, Biol. Soc. Wash., Proc., 3:22, 1885. (Isla Cozumel, Quintana Roo.)

RANGE. Endemic to Isla Cozumel.

SPECIMENS. Quintana Roo—Isla Cozumel, 1♂, Jan. 6, 1♀, 1?, Jan. 7, 1949.

HABITAT. High second growth and thin deciduous forest.

WEIGHT. The male and female weighed 36.8 and 33.4 grams, respectively; the unsexed bird 35.2 grams. These few data may indicate that the insular race is heavier, as well as larger in linear dimensions, than *C. g. yucatanensis*.

VIREO BAIRDI Ridgway.
Cozumel Vireo.

Vireo bairdi Ridgway, Biol. Soc. Wash., Proc., 3:22, 1885. (Isla Cozumel, Quintana Roo.)

RANGE. Endemic to Isla Cozumel.

SPECIMENS. Quintana Roo—Isla Cozumel, 1♀, Jan. 5, 1♂, Jan. 6, 1♂, 1?, Jan. 7, 1♀, Jan. 10, 1♂, 1?, Jan. 17, 1949, 1♂, June 1, 1950, 1♂, Feb. 1, 1♂, Feb. 3, 1951, 1♂, 1?, June 4, 1♂, June 7, 1952.

HABITAT. Heavy underbrush of deciduous forest.

REMARKS. This distinctively colored species resembles *V. griseus* in proportions and pattern and is obviously closely related to it. *V. griseus* has differentiated into a number of well-marked races in both insular and mainland areas. These races are so distinctive they are often considered to be full species. *V. bairdi* may be an additional subspecies, but its color is unique in the genus and for that reason I am reluctant to reduce it to racial rank.

Cozumel Vireos are very common in thickets. During the brief period I observed them I thought that they were much more terrestrial and wren-like than other members of the genus.

WEIGHT. The weights of three males were 11.5, 11.7, and 12.0, and of two females 11.2 and 12.0 grams.

VIREO GRISEUS GRISEUS (Boddaert).
White-eyed Vireo.

Tanagra grisea Boddaert, Tabl. Pl. Enl., p. 45, 1783. (Louisiana.)

RANGE. The species occurs from the eastern United States through the West Indies and Mexico to Costa Rica; the race breeds in the eastern

United States and winters from the southern United States to Honduras and the Greater Antilles; throughout the Peninsula, including Isla Cozumel (Salvin, 1888); several resident races in the southern United States, Mexico, Central America, and the West Indies; various races, e.g., the West Indian *V. "crassirostris"* complex, often considered of specific rank.

SPECIMENS. Quintana Roo—Chetumal, 1♀, Nov. 17, 1♀, Nov. 25, 1♀, Dec. 17, 1♂, Dec. 24, 1948, 1♂, Jan. 16, 1949, 1♀, 1♂, Oct. 26, 1952; Bacalar, 1♀, Feb. 18, 1♀, Oct. 27, 1952; Ucum, 1♀, Feb. 24, 1952; Tabi, 1♀, Mar. 27, 1953. Yucatán—Xocempich, 1♂, Nov. 10, 1♂, Dec. 16, 1949, 2♀, Sept. 28, 1♀, Oct. 2, 1♀, Oct. 3, 1♂, Oct. 4, 1950; Mérida, 1♂, Oct. 6, 1950; Dzidzantún, 1♂, Apr. 27, 1952. Campeche—Ichek, 1♀, Sept. 25, 1♀, Sept. 26, 1950.

HABITAT. Second growth throughout the Peninsula.

REMARKS. This race, which arrives in late September and departs as late as the last week in April, is a common visitant.

WEIGHT. Two males and a female weighed 11.1, 11.4, and 10.8 grams, respectively.

VIREO GRISEUS SEMIFLAVUS Salvin.

Vireo semiflavus Salvin, Zool. Soc. London, Proc., 31:188, 1863. (Petén, Guatemala.)

RANGE. The race ranges throughout the Peninsula, including Islas Holbox and Mujeres, and through Petén, British Honduras, Honduras, including Ruatan Island, to Nicaragua; no other race appears to be contiguous.

SPECIMENS. Quintana Roo—Chetumal, 1♀, May 6, 1♀, May 27, 1♂, June 3, 2♂, 2♀, June 8, 3♂, June 9, 2♂, 1♀, June 10, 3♂, 1♀, June 11, 1♂, 1♀, June 13, 1♂, 1♀, June 15, 1♂, 1♀, June 16, 2♂, June 20, 1♂, June 21, 1♂, June 22, 1♂, 1♀, June 24, 1949, 1♀, May 3, 1950; Tabi, 1♀, Mar. 14, 1949; Isla Holbox, 1♀, Dec. 17, 1♂, Dec. 19, 1950; Isla Mujeres, 1♂, Dec. 24, 1950. Yucatán—Santa Clara, 2♂, Aug. 24, 1♂, Sept. 12, 1950, 1♀, May 15, 1952; Xocempich, 1♂, July 12, 1952; Mérida, 2♂, Oct. 5, 1950; 10 km. N. Mérida, 1♀, Sept. 6, 1950. Campeche—Pueblo Nuevo, 1♂, July 19, 1950.

HABITAT. Second growth throughout the region.

REMARKS. This resident race is local, but in regions where there has been considerable deforestation it is one of the most numerous species.

BREEDING. Cole (1906) recorded a nest with eggs on April 7, and I have records of breeding birds from May through June.

WEIGHT. Nineteen males ranged from 9.7 to 11.1 grams, with a mean of 10.26 ± 0.11 ; nine females from 9.3 to 12.4 grams, with a mean of 10.70 ± 0.33 .

VIREO FLAVIFRONS Vieillot.
Yellow-throated Vireo.

Vireo flavifrons Vieillot, Hist. Nat. Amér. Sept., 1:85, 1808. (Eastern United States.)

RANGE. A monotypic species which breeds from south-central Canada southward over the eastern half of the United States; winters from Mexico to Colombia; on the Peninsula in Yucatán, Campeche, and Quintana Roo, including Isla Cozumel (Salvin, 1888).

SPECIMENS. Quintana Roo—Chetumal, 1♂, Dec. 6, 1948. Yucatán—Xocempich, 1♂, Dec. 5, 1949. Campeche—Ichek, 1♀, Sept. 27, 1950.

HABITAT. Thickets throughout the Peninsula and on Isla Cozumel.

REMARKS. Yellow-throated Vireos are uncommon visitants.

WEIGHT. A male weighed 17.8 grams.

VIREO SOLITARIUS SOLITARIUS (Wilson).
Solitary Vireo.

Muscicapa solitaria Wilson, Am. Ornith., 2:143, 1810. (Philadelphia, Pennsylvania.)

RANGE. The species ranges from southern Canada to Guatemala and British Honduras; the race breeds in eastern Canada and the eastern United States; winters from the southern United States to Nicaragua; one record from Chunyaxche, Quintana Roo (Griscom, 1926a).

VIREO OLIVACEUS OLIVACEUS (Linnaeus).
Red-eyed Vireo.

Muscicapa olivacea Linnaeus, Syst. Nat., ed. 12, 1:327, 1766. (Carolina.)

RANGE. The species breeds from Canada to Argentina; the race, sometimes considered specifically distinct, from southern Canada to northern Coahuila; winters in northern South America; transient in Yucatán and Quintana Roo, and on Cayos Arcas and Arrecife Alacrán, Banco Campeche (Paynter, 1953); many races breeding in Middle and South America.

SPECIMENS. Quintana Roo—Chetumal, 1♂, Apr. 14, 1949; Carrillo Puerto, 1♀, Apr. 8, 1949; Ch'ich', 1♂, May 13, 1950. Yucatán—Xocempich, 1♂, Sept. 27, 1♀, Oct. 2, 1950.

HABITAT. During its passage through the Peninsula the species probably occurs quite generally in any type of habitat.

REMARKS. In addition to the above records, there is one from Chichén

Itzá of a bird heard singing on April 3 (Cole, 1906) and one from Silam [= Dzilam] (Boucard, 1883). The latter was supposedly collected by Gaumer in November, but when Salvin (*in* Boucard, 1883) examined the collection the specimen was not present. November would be an exceptionally late date for the species and I consider the record hypothetical.

The presence of the species on the Peninsula as late as mid-May is another unexpected, but valid, date.

WEIGHT. A male, with a moderate amount of fat, weighed 20.6 grams.

VIREO OLIVACEUS FLAVOVIRIDIS (Cassin).

Vireosylvia flavoviridis Cassin, Acad. Nat. Sci., Phila., Proc., 5:152, 1851. (San Juan de Nicaragua, Nicaragua.)

RANGE. The race breeds from Jalisco and Tamaulipas to Panama; on the Peninsula in Campeche (Ridgway, 1904), Yucatán, and Quintana Roo; winters in Amazonia.

SPECIMENS. Quintana Roo—Chetumal, 1♀, May 26, 2♀, June 18, 1♂, 1♀, June 20, 1♂, June 29, 1949, 1♂, May 22, 1♀, May 28, 1950; Carrillo Puerto, 1♀, June 5, 1♂, June 16, 1♀, June 21, 1949; Kantunil-Kin, 1♀, Apr. 23, 1949. Yucatán—Xocempich, 1♂, 1♀, May 10, 1949, 1♀, Oct. 3, 1950, 1♀, May 9, 1♂, June 20, 1952; 20 km. E. Sucopó, 1♂, Apr. 22, 1949.

HABITAT. Light forest throughout the Peninsula.

REMARKS. The earliest this form has been recorded is April 3 (Cole, 1906) and the latest October 3. It is ubiquitous in suitable habitats.

BREEDING. Reproductively active specimens have been collected from late May through June. Presumably nesting begins earlier than the data indicate.

WEIGHT. The weight of three males was 15.9, 16.3, and 20.6 grams; four females 15.8, 16.4, 16.8, and 17.1 grams.

VIREO ALTILOQUUS MAGISTER (Lawrence). West Indian Vireo.

Vireosylvia magister (Baird Ms.) Lawrence, Lyc. Nat. Hist. New York, Ann., 10:20, 1871. (Belize, British Honduras.)

RANGE. The species occurs through the West Indies, on the Bay Islands, Honduras, on Old Providence and St. Andrews Islands, on islands off the coast of Quintana Roo, in coastal Quintana Roo and British Honduras, and in southern Florida; the race on Islas Holbox (Salvin, 1888), Mujeres, and Cozumel, in coastal Quintana Roo and British Honduras, and on the Bay Islands, Honduras; seven additional races throughout the range.

SPECIMENS. Quintana Roo—Xcalac, 1♂, Feb. 3, 1949; Isla Cozumel, 1♀, Jan. 6, 1♂, Jan. 7, 1949, 1♂, June 1, 1950, 1♂, June 4, 1♂, June 6, 2♀, June 7, 1952; Isla Mujeres, 1♂, Dec. 22, 1♀, Dec. 24, 2♂, 1♀, Dec. 25, 1♀, Dec. 26, 1950.

HABITAT. On the islands I have found the species in as diverse habitats as low bushes along stone walls, fruit trees, gardens, low deciduous forest, mangroves, and even in coconut palms. On the mainland it is confined to a narrow belt of low forest along the coast (Griscom, 1926a).

REMARKS. The populations which occur on Grand Cayman Island and in Quintana Roo and British Honduras, as well as on various islands off their shores, have been treated as a species (*V. magister*) apart from the West Indian populations (*V. altiloquus*). *V. magister* is supposedly distinguished from *V. altiloquus* by its more grayish brown, rather than green, coloration, and by the absence of a sub-malar streak. These characters, however, are not consistent.

The sub-malar streak is never entirely absent in Antillian birds, but it is very reduced in *V. a. grandior*, thereby providing a transition between the two forms.

The color of *V. magister* is highly variable, as has been noted earlier by Griscom (1926a). Several specimens of *V. magister* from the islands off Quintana Roo have a decided greenish cast and are almost indistinguishable in this respect from some West Indian birds. This close approach in color probably led Salvin (1888) to identify one specimen from Isla Cozumel as *V. calidris* (= *V. altiloquus*). I have not seen the bird, but have no hesitancy in assuming this to be the case.

Thus, the gap between the two forms is not a reality. There appears to be no valid reason for not uniting both species under the name *V. altiloquus*. A final item of evidence is found in the fact that the "species" are not sympatric at any point, but rather replace one another in the orderly fashion expected of geographic representatives of a species.

Hellmayr (1935) and Bond (1950) have gone even further in suggesting that these species might be placed under *V. olivaceous*. I, however, do not believe that this should be done. While it is obvious that *V. altiloquus* is simply a large insular representative of *V. olivaceus*, differentiation has left a wide space between them and it appears better to consider them members of the same superspecies. If they were considered to be a single species we would be confronted with a situation where two races meet but do not intergrade, since in coastal Quintana Roo and British Honduras *V. a. magister* occurs adjacent to *V. o. flavoviridis*. Because the habitat requirements of the two forms are different, they are never found sympatrically. But there is little question that they would remain reproductively isolated even if sympatric.

WEIGHT. These specimens exhibited an unexpected range in weight, the males weighing 15.6, 15.9, 19.0, 20.4, and 22.2 grams; the females 17.4, 18.1, and 21.1 grams.

VIREO PHILADELPHICUS (Cassin).
Philadelphia Vireo.

Vireosylva philadelphica Cassin, Acad. Nat. Sci., Phila., Proc., 5:153, 1851.
(Philadelphia, Pennsylvania.)

RANGE. A monotypic species breeding from central Canada southward to New Hampshire and North Dakota; winters from Guatemala, Yucatán, and Isla Cozumel, Quintana Roo (Salvin, 1888) to Panama.

SPECIMEN. Yucatán—Mérida, 1♂, Oct. 9, 1950.

REMARKS. This specimen, which is from the Legters collection, is the second record for the Peninsula, the other having been obtained by Gaumer on Isla Cozumel in January (Salvin, 1888).

Philadelphia Vireos are apparently only very casual winterers in the region.

HYLOPHILUS OCHRACEICEPS OCHRACEICEPS Sclater.
Tawny-crowned Greenlet.

Hylophilus ochraceiceps Sclater, Zool. Soc. London, Proc., 27:375, 1859. (Playa Vicente, Oaxaca.)

RANGE. The species is distributed from Mexico to Brazil; the race from Veracruz and Oaxaca south to Panama; on the Peninsula in Campeche (Ridgway, 1904) and Quintana Roo.

SPECIMENS. Quintana Roo—Laguna Chacabacab, 1♀, May 3, 1949; 24 km. N. Xtocomo, 1♀, Feb. 24, 1♂, Feb. 25, 1♀, Feb. 27, 1951; Carrillo Puerto, 1♂, 1♀, June 17, 2♂, June 19, 1950; Xcan, 1♂, 1♀, Apr. 29, 1949.

HABITAT. Underbrush of rain forest.

REMARKS. This species is relatively uncommon on the Peninsula, where it is confined to rain forest.

BREEDING. The male collected on April 29 had enlarged testes and females taken on April 29 and May 13 had moderately developed ovaries.

WEIGHT. Two males weighed 8.5 and 10.2 grams; four females, 8.7, 9.9, 10.5, and 10.6 grams.

HYLOPHILUS DECURTATUS DECURTATUS (Bonaparte).
Gray-headed Greenlet.

Sylvicola decurtata Bonaparte, Zool. Soc. London, Proc., 5:118, 1837(–1838).
(Guatemala.)

RANGE. The species occurs from Mexico to Ecuador; the race from Veracruz and Oaxaca to Costa Rica; on the Peninsula in Quintana Roo and Campeche.

SPECIMENS. Quintana Roo—Chetumal, 1♂, Dec. 18, 1948, 1♂, June 8, 1♂, June 10, 1♂, June 17, 1♂, June 18, 1♂, June 21, 1949; 25 km. W. Chetumal, 1♂, Aug. 12, 1950; 46 km. W. Chetumal, 1♀, Feb. 12, 1949; Laguna Chacabacab, 1♂, May 11, 1♀, May 14, 1949; Agua Blanca, 1♂, June 4, 1949; Carrillo Puerto, 1♀, Mar. 5, 1949, 1♀, June 5, 1♂, June 10, 1♂, June 13, 1♀, June 15, 1♂, 1♀, June 16, 1♂, June 21, 1♂, June 22, 1950; Xcan, 1♂, Mar. 20, 1950. Campeche—2 km. N. Aguada Seca, 1♂, Feb. 7, 1951; Pueblo Nuevo, 1♂, Sept. 22, 1950.

HABITAT. Second growth, edges, and moderately dense forest within the zone of rain forest.

REMARKS. This species is confined to the rain forest zone. Ridgway (1904) recorded the species from Puerto Morelos and La Vega, "Yucatán." These localities are now in the Territory of Quintana Roo.

BREEDING. Breeding birds were taken from mid-May through June. There are no data for other months.

WEIGHT. Nine males ranged from 7.4 to 9.7, with a mean of 8.29 ± 0.25 grams. A female weighed 8.1 grams.

Family PARULIDAE

MNIOTILTA VARIA (Linnaeus).

Black and White Warbler.

Motacilla varia Linnaeus, Syst. Nat., ed. 12, 1:33, 1766. (Hispaniola.)

RANGE. Breeds in eastern North America; winters from Mexico to northern South America; on the Peninsula in Campeche (Traylor, 1941), including Cayos Arcas and Cayo Arenas, Banco Campeche (Paynter, 1953), in Yucatán, and in Quintana Roo, including Islas Cozumel, Holbox (Salvin, 1888), and Mujeres (Salvin, 1888), Cayo Culebra (sight records), and Cayo Centro, Banco Chinchorro (Griscom, 1926b).

SPECIMENS. Quintana Roo—Chetumal, 1♂, Nov. 22, 1948; Isla Tamalcab, 1♂, Dec. 12, 1948; Carrillo Puerto, 1♀, Mar. 5, 1949; Isla Cozumel, 1♀, Jan. 5, 1949. Yucatán—Dzidzantún, 1♂, Aug. 30, 1952.

HABITAT. Wooded areas throughout the Peninsula.

REMARKS. This is one of the most abundant winter visitors. It has been seen as early as August 28 (Paynter, 1953) and as late as April 13 (Cooke, 1904).

WEIGHT. Two males weighed 9.5 and 10.3; two females 8.6 and 8.9 grams.

PROTONOTARIA CITREA (Boddaert).

Prothonotary Warbler.

Motacilla citrea Boddaert, Tabl. Pl. Enl., p. 44, 1789. (Louisiana.)

RANGE. A monotypic species which breeds in the eastern half of the United States and winters from the Yucatán Peninsula to Colombia; mi-

grant, and a rare winterer, in Yucatán, in Quintana Roo, including Isla Cozumel (Salvin, 1888), and in Campeche (Renardo, 1886), including Cayos Arcas and Cayo Arenas, Banco Campeche (Paynter, 1953).

SPECIMENS. Quintana Roo—Chetumal, 1 ♂, 1 ♀, fall, 1949. Yucatán—Xocempich, 1 ♂, Apr. 11, 1952. Campeche—Cayos Arcas, 1 ♂, Aug. 24, 1952.

HABITAT. Presumably occurs in almost any type of habitat while migrating through the Peninsula.

REMARKS. T aylor (1941) collected specimens at Chichén Itzá on October 7 and 18, Salvin (1888) reported a Gaumer-collected specimen from Isla Cozumel in January, and Renardo (1886) took specimens in the winter in Campeche. It appears, therefore, that occasionally the species may winter on the Peninsula.

LIMNOTHLYPIS SWAINSONII (Audubon).
Swainson Warbler.

Sylvia swainsonii Audubon, Bds. Am., 2, pl. 198, 1834. (South Carolina.)

RANGE. Breeds in the southeastern United States; winters in Jamaica, on Swan Island, in British Honduras (Bond, 1950), and in southern Campeche (T aylor, 1941) and Quintana Roo.

SPECIMEN. Quintana Roo—46 km. W. Chetumal, 1 ♂, Feb. 12, 1949.

HABITAT. The specimen was collected in a dense tangle of vines within high rain forest.

REMARKS. In addition to the two records cited above, a third specimen was taken along the Río Hondo (Peters, 1913).

WEIGHT. The bird weighed 16.0 grams.

HELMITHEROS VERMIVORUS (Gmelin).
Worm-eating Warbler.

Motacilla vermivora Gmelin, Syst. Nat., 1:951, 1789. (Pennsylvania.)

RANGE. The species breeds in the eastern United States; winters from southern Mexico to Panama, and in the West Indies and Bahamas; recorded from Campeche, Yucatán, and Quintana Roo, including Isla Cozumel (Salvin, 1888).

SPECIMENS. Quintana Roo—46 km. W. Chetumal, 1 ♀, Feb. 17, 1949; Bacalar, 1 ♂, Feb. 18, 1952; 24 km. NW. Xtocomo, 1 ♀, Feb. 25, 1 ♀, Feb. 26, 1951. Yucatán—Xocempich, 1 ♂, Apr. 16, 1952. Campeche—Ichek, 1 ♀, Sept. 21, 1950; 2 km. N. Aguada Seca, 1 ♂, Feb. 5, 1 ♂, Feb. 7, 1951.

HABITAT. All the specimens that I have collected or have observed have been in the undergrowth of heavy rain forest. The records from Yucatán

and possibly from Isla Cozumel, regions of deciduous forest, probably refer to transients.

REMARKS. Lawrence (1869) cited a record from Mérida and Salvin (1888) one from Isla Cozumel, but the dates of collection are not given. The fact that our only specimen from Yucatán was taken in mid-April suggests that the species may merely pass through the deciduous forest on its way to and from its wintering grounds in more humid regions.

It is a rare bird on the Peninsula.

WEIGHT. Two males weighed 12.7 and 13.0; three females 10.9, 11.9, and 12.3 grams.

VERMIVORA CHRYSOPTERA (Linnaeus).
Golden-winged Warbler.

Motacilla chrysoptera Linnaeus, Syst. Nat., ed. 12, 1:333, 1766. (Pennsylvania.)

RANGE. The species breeds in southeastern Canada and in the eastern United States; winters from southern Mexico to northern South America; on the Peninsula recorded as a trans-Gulf migrant on Cayos Arcas (Paynter, 1953) and Isla Pérez, Arrecife Alacrán, Banco Campeche, and as a winter visitant in Yucatán and Campeche (Renardo, 1886).

SPECIMEN. Yucatán—Isla Pérez, Arrecife Alacrán, 1 ♀, Sept. 3, 1952.

REMARKS. The records of Renardo (1886), supposedly substantiated by specimens, afford the only evidence that this species winters on the Peninsula.

VERMIVORA PINUS (Linnaeus).
Blue-winged Warbler.

Certhia pinus Linnaeus, Syst. Nat., ed. 12, 1:187, 1766. (Philadelphia, Pennsylvania.)

RANGE. This form breeds in the eastern United States; winters primarily in southern Mexico and Guatemala, and casually to northern South America; on the Peninsula in Yucatán (Boucard, 1883) and Quintana Roo.

SPECIMENS. Quintana Roo—Tabi, 1 ♀, Mar. 12, 1949; 15 km. NW. Kantunil-Kín, 1 ♀, Dec. 14, 1950.

HABITAT. Both specimens were taken in high second growth.

REMARKS. These are the only examples of the species which I have seen on the Peninsula.

WEIGHT. The female weighed 7.3 and the unsexed bird 8.5 grams.

VERMIVORA PEREGRINA (Wilson).
Tennessee Warbler.

Sylvia peregrina Wilson, Am. Ornith., 3:83, 1811. (Tennessee.)

RANGE. Breeds in Alaska, Canada, and the northern United States; winters from southern Mexico to northern South America; on the Peninsula in Campeche and Yucatán, and on Isla Cozumel (Salvin, 1888) and Cayo Culebra, Quintana Roo.

SPECIMENS. Quintana Roo—Cayo Culebra, 1♂, Apr. 6, 1949. Yucatán—Mérida, 1♀, Oct. 19, 1950; Xocempich, 1♀, Oct. 10, 1952. Campeche—Ichek, 1♀, Sept. 21, 1950, 1♂, Apr. 22, 1952.

REMARKS. I have observed the species only at Cayo Culebra, the remaining specimens having been collected by Legters. This is one of the rarest warblers wintering in the region.

WEIGHT. A male weighed 9.0 grams.

PARULA AMERICANA PUSILLA (Wilson).
Parula Warbler.

Sylvia pusilla Wilson, Am. Ornith., 4:17, 1811. (Pennsylvania.)

RANGE. The species breeds in eastern North America; the race throughout the range with the exception of the southeastern United States, which is occupied by *P. a. americana*; winters from Tamaulipas south to Nicaragua, and in the Greater Antilles; on the Peninsula in Quintana Roo, including Islas Mujeres (Salvin, 1888), Holbox (Salvin, 1888), and Cozumel, and on Cayo Centro, Banco Chinchorro, in Yucatán, including Arrecife Alacrán, Banco Campeche (Paynter, 1953), and in Campeche.

SPECIMENS. Quintana Roo—Chetumal, 1♀, Nov. 5, 1♂, Dec. 29, 1948, 1♂, Oct. 25, 1952; Bacalar, 1♂, Feb. 10, 1952; Isla Cozumel, 1♀, Jan. 5, 1♀, Jan. 6, 1♀, Jan. 9, 1♀, Jan. 15, 1949. Yucatán—Xocempich, 1♂, Nov. 7, 1♂, Dec. 30, 1949, 1♀, Sept. 29, 1950; at sea 30 km. N. Santa Clara, 1♂, Aug. 30, 1949. Campeche—Pueblo Nuevo, 1♀, Sept. 22, 1950.

HABITAT. Very generally distributed in diverse habitats.

REMARKS. Parula Warblers winter in moderate numbers on the whole Peninsula and several times have been observed in migration over the Gulf of Mexico (Paynter, 1951, 1953).

WEIGHT. A male weighed 7.1 and two females 6.3 and 6.4 grams.

DENDROICA PETECHIA AESTIVA (Gmelin).
Yellow Warbler.

Motacilla aestiva Gmelin, Syst. Nat., 1:996, 1789. (Canada.)

RANGE. The species is distributed from Alaska and Newfoundland southward over most of Canada and the United States, in coastal and central Mexico, throughout the West Indies, on the coasts of Central and South America to Peru and Venezuela, and on the Galapagos Islands; minutely divided into more than 30 races; *D. p. aestiva* breeds over much of Canada and the United States and winters from southern Mexico to the northern half of South America; Peninsular records from Quintana Roo, including Isla Cozumel, from Yucatán, and from Cayos Arcas, Banco Campeche; racial identity of Gaumer's specimens (Salvin, 1888) from Islas Mujeres and Holbox not known.

SPECIMENS. Quintana Roo—Chetumal, 1♂, 1♀, Apr. 14, 1♂, May 7, 1949; Carrillo Puerto, 1♂, Apr. 12, 1949, 1♀, May 17, 1950; Tabi, 1♀, Apr. 2, 1953; Isla Cozumel, 1♂, Jan. 12, 1949. Yucatán—Santa Clara, 1♂, Mar. 25, 1950; Dzidzantún, 1♀, May 3, 1952. Campeche—Cayos Arcas, 1♀, Aug. 29, 1952.

HABITAT. Winters in second growth, dooryards, and light forest throughout the region.

REMARKS. Within the area covered in this work there occur examples of *D. petechia* belonging to three subspecies groups. These groups were at one time considered to be specifically separable, but now it is generally conceded that they should be united under *D. petechia*.

The resident birds are rounded-winged forms which are divisible into *D. p. bryanti*, which belongs to the group of "Mangrove Warblers" in which the males have complete brown hoods, and *D. p. rufivertex*, which belongs to the group of "Golden Warblers," in which the brown is restricted to the top of the head. The Mangrove Warblers range along the coasts of Middle America, and on some islands, to South America. The Golden Warblers are distributed throughout the Antilles, on Isla Cozumel and other islands off the coast of Central America, on the Galapagos, and on the coast of South America.

The migrant birds are pointed-winged forms, with yellow or green heads, which belong to the group of "Yellow Warblers." The Yellow Warblers breed in Alaska, Canada, the United States, and through much of northern Mexico. This group has been split into eight races, several of which are doubtfully distinguishable in the breeding plumage and which cannot possibly be identified in winter plumage.

All of the specimens in this collection which are listed under *D. p. aestiva* are bright, light-colored birds. I have full confidence in my identification of them. Those specimens listed under *D. p. rubiginosa* are highly doubtful, as is explained below.

Yellow Warblers winter very casually on the Peninsula. There are notice-

able influxes of transient birds in August and September, and in April and May.

WEIGHT. The Cozumel bird weighed 8.4 grams. Two males and two females, presumably transients, weighed 8.3 and 9.3, and 8.1 and 10.6 grams, respectively.

DENDROICA PETECHIA RUBIGINOSA (Pallas).

Motacilla rubiginosa Pallas, Zoogr. Rosso-Asiat., 1:496, 1811 (?). (Kodiak Island, Alaska.)

RANGE. This race, which probably is not distinguishable from *D. p. amnicola* of Newfoundland, breeds from Alaska to British Columbia, and probably across northern Canada; winters from Mexico to Panama; on the Peninsula recorded, with uncertainty, from Campeche (Traylor, 1941), Yucatán, and Quintana Roo, including Islas Mujeres and Holbox, Cayo Culebra, and Banco Chinchorro (Griscom, 1926b).

SPECIMENS. Quintana Roo—Chetumal, 1 ♀, Oct. 30, 1 ♂, Nov. 2, 1948; Bacalar, 1 ♂, Feb. 10, 1952; Cayo Culebra, 1 ♀, Apr. 3, 1949; Isla Mujeres, 1 ♀, Dec. 22, 2 ♂, Dec. 24, 1 ♀, Dec. 26, 1950; Isla Holbox, 1 ♂, 1 ♀, Dec. 17, 1950. Yucatán—Santa Clara, 1 ♀, Sept. 2, 1950.

HABITAT. Apparently identical with that of *D. p. aestiva*.

REMARKS. The specimens collected on September 2, October 30, and November 2, agree well with breeding specimens of *D. p. rubiginosa*. The remaining birds, all of which were taken in the winter or early spring, are much darker.

While it is probable that these specimens are true examples of winter-plumaged *D. p. rubiginosa*, which would seem to indicate that this race winters chiefly on the islands, there is also the suggestion that perhaps *D. p. aestiva* may darken appreciably in the winter and be indistinguishable from the more northern race. The suggestion is somewhat strengthened by the observation that while a number of spring and fall birds were identified without question as *D. p. aestiva*, only one winter bird was, i. e., the specimen from Isla Cozumel. With the limited material available it is useless to expand this argument, but it seems a point to bear in mind when dealing with migrant Yellow Warblers.

WEIGHT. Three males weighed 7.5, 9.4, and 9.8 grams; two females 7.2 and 8.3 grams.

DENDROICA PETECHIA RUFIVERTEX Ridgway.

Dendroica petechia rufivertex Ridgway, Biol. Soc. Wash., Proc., 3:21, 1885. (Isla Cozumel, Quintana Roo.)

RANGE. Endemic to Isla Cozumel.

SPECIMENS. Quintana Roo—Isla Cozumel, 1♂, Jan. 4, 2♂, Jan. 7, 1♂, Jan. 9, 1♀, Jan. 11, 1♂, 1♀, Jan. 12, 1♂, 1♀, Jan. 15, 1♂, Jan. 17, 1949, 1♂, May 31, 1950, 1♂, Feb. 3, 1951, 1♂, June 7, 1952.

HABITAT. Bushes and small trees throughout the island.

REMARKS. This form, which is closer to the West Indian races than to *D. p. bryanti*, is extremely abundant.

Mangroves are sparsely distributed in the vicinity of San Miguel, where my field work was centered, but limited observations confirm Griscom (1926b) who stated that this race is not a mangrove inhabitant.

WEIGHT. Seven males ranged from 8.1 to 9.2 grams, with a mean of 8.64 ± 0.12 . Two females weighed 8.4 and 8.0 grams.

DENDROICA PETECHIA BRYANTI Ridgway.

Dendroica vieillotii var. *bryanti* Ridgway, Am. Nat., 7:605, 1873. (Belize, British Honduras.)

RANGE. The race ranges along the coast and inshore islands from Tamaulipas to Costa Rica; on the Peninsula in Yucatán and Quintana Roo, including Isla Holbox, Isla Contoy, Cayo Culebra, and Cayos Centro and Norte, Banco Chinchorro.

SPECIMENS. Quintana Roo—Xcalac, 1♂, Feb. 2, 1949; Vigía Chico, 2♂, Mar. 29, 1♀, Mar. 30, 1949; Cayo Culebra, 1♀, Apr. 4, 1949; Cayo Centro, 2♂, Feb. 5, 1949; Cayo Norte, 2♂, 3♀, Feb. 4, 1949; Isla Contoy, 1♂, 1♀, Dec. 27, 1950; Isla Holbox, 1♀, Dec. 17, 2♂, Dec. 18, 1950. Yucatán—Sisal, 1♀, Jan. 7, 1951; Santa Clara, 1♂, Jan. 12, 1♀, July 3, 1♂, Aug. 22, 1♂, Aug. 23, 1♀, Aug. 24, 2♂, 1♀, Aug. 25, 2♂, Aug. 26, 1♂, Aug. 28, 1♂, Aug. 30, 2♀, Sept. 2, 1950, 1♂, 1♀, May 15, 2♂, May 16, 1952.

HABITAT. Almost confined to mangroves; occasionally in shrubs close to the shore.

REMARKS. This race is abundant, but occurs in a very restricted habitat. The lack of records from Campeche is probably partly because of the rarity of mangroves along much of the coast and partly because collectors have neglected that area of the state.

Cole (1906) recorded "*D. b. bryanti*" from Chichén Itzá, but an examination of the specimen proves it to be a visitant, *D. p. aestiva*.

Ridgway (1902, p. 530) listed a single example of this race from Isla Cozumel. There is no other record of *D. p. bryanti* from the island and it is presumed that the specimen originated in some other locality and was mislabeled. A similar situation with another specimen of this race supposedly from Isla Cozumel is discussed by Hellmayr (1935).

The apparent absence of a resident Yellow Warbler on Isla Mujeres is noteworthy. The almost complete lack of mangroves may account for this.

BREEDING. The only available records are for March 29 and 30 when a breeding male and female were collected at Vigía Chico, and for May 16 when a male with fully developed testes was taken at Santa Clara.

WEIGHT. Three mature males weighed 10.4, 10.5, and 12.0 grams; two mature females 8.4 and 11.2 grams; two immature females 11.2 and 12.7 grams.

DENDROICA MAGNOLIA (Wilson).
Magnolia Warbler.

Sylvia magnolia Wilson, Am. Ornith., 3:65, 1811. (Fort Adams, Mississippi.)

RANGE. Breeds across southern Canada and in the eastern United States; winters from Mexico to Panama; recorded from Yucatán, Campeche, including Cayos Arcas, Banco Campeche (Paynter, 1953), and Quintana Roo, including Isla Cozumel.

SPECIMENS. Quintana Roo—Chetumal, 1♀, Nov. 9, 1♀, Nov. 16, 1♂, Nov. 23, 1♀, Dec. 22, 1948; Km. 25, Chetumal-Bacalar Rd., 1♂, Mar. 10, 1952; Bacalar, 1♀, Feb. 10, 1♂, Oct. 27, 1952; Xcalac, 1♀, Feb. 2, 1949; Carrillo Puerto, 1♀, Mar. 4, 1949, 1♂, Apr. 22, 1950; Tabi, 1♀, Mar. 23, 1♂, Mar. 30, 1953; Kantunil-Kín, 1♂, Apr. 23, 1949; Isla Cozumel, 1♀, Jan. 3, 1949. Yucatán—Xocempich, 1♀, Nov. 25, 1949, 1♀, Sept. 28, 1♀, Oct. 2, 1950; Santa Clara, 1♂, Apr. 26, 1953. Campeche—Santa Rita, 2♂, Dec. 21, 1949; Ichek, 1♂, Sept. 25, 1950, 1♀, Apr. 21, 1♂, 1♀, Apr. 22, 1♀, Apr. 25, 1952.

HABITAT. Winters in wooded areas.

REMARKS. Magnolia Warblers are common in all forested regions, but seem more abundant in the southern half of the Peninsula.

WEIGHT. Two males and a female weighed 7.6, 7.7, and 7.2 grams, respectively.

DENDROICA TIGRINA (Gmelin).
Cape May Warbler.

Motacilla tigrina Gmelin, Syst. Nat., 1:985, 1789. (Canada.)

RANGE. The species breeds in the eastern half of Canada and in the northeastern United States; winters in the Antilles and, apparently, very casually in Yucatán (Boucard, 1883) and Quintana Roo, including Banco Chinchorro.

SPECIMEN. Quintana Roo—Cayo Norte, Banco Chinchorro, 1♀, Feb. 4, 1949.

REMARKS. Peters (1913) collected a specimen of Cape May Warbler at Camp Mengel (= Alvaro Obregón), which was the second mainland record for the species.

DENDROICA CAERULESCENS CAERULESCENS (Gmelin).
Black-throated Blue Warbler.

Motacilla caerulescens Gmelin, Syst. Nat., 1:960, 1789. (Hispaniola.)

RANGE. The species breeds from Ontario and Quebec southward over much of the northeastern United States and southward in the Appalachians to Georgia; the nominate race throughout the range with the exception of the southern Appalachians; winters primarily in the Greater Antilles, and casually in the Florida Keys, the Bahamas, on Isla Cozumel, Quintana Roo, and from Guatemala to Colombia.

SPECIMEN. Quintana Roo—Isla Cozumel, 1♀, Jan. 12, 1949.

HABITAT. Deciduous forest.

REMARKS. The first record of this species from Isla Cozumel was obtained by Gaumer (Salvin, 1888), who collected a pair. I saw only two during my stay on the island.

WEIGHT. The bird weighed 7.7 grams.

DENDROICA CORONATA CORONATA (Linnaeus).
Myrtle Warbler.

Motacilla coronata Linnaeus, Syst. Nat., ed. 12, 1:333, 1766. (Pennsylvania.)

RANGE. The species breeds from Alaska over much of Canada and the northeastern United States; the race over the entire area, except its westernmost range which is occupied by doubtfully distinct *D. c. hooveri*; winters from the United States to Colombia and in the Greater Antilles; on the Peninsula in Yucatán and Quintana Roo, including Islas Holbox (Salvin, 1888), Contoy, Mujeres, and Cozumel, and on Banco Chinchorro.

SPECIMENS. Quintana Roo—46 km. W. Chetumal, 1♀, Feb. 15, 1949; Cayo Centro, Banco Chinchorro, 1♀, Feb. 5, 1949; Isla Cozumel, 1♀, Jan. 4, 1949; Isla Mujeres, 1♂, Dec. 22, 1♀, Dec. 23, 1♀, Dec. 24, 1950; Isla Contoy, 1♀, Dec. 27, 1950. Yucatán—El Cuyo, 1♀, 1♀, Dec. 9, 1950; Xocempich, 1♀, Dec. 12, 1♂, Dec. 13, 1949; Sisal, 1♀, Jan. 6, 1951.

HABITAT. Chiefly in coastal and insular scrub; much more rarely inland in second growth.

REMARKS. Along the shore and on islands, the Myrtle Warbler often occurs in small flocks. Elsewhere it is uncommon.

The absence of records from Campeche is probably because of neglect rather than any distributional lacuna.

WEIGHT. A male weighed 11.2; five females 8.8, 9.4, 10.0, 10.3, and 12.1 grams.

DENDROICA VIRENS VIRENS (Gmelin).
Black-throated Green Warbler.

Motacilla virens Gmelin, Syst. Nat., 1:985, 1789. (Pennsylvania.)

RANGE. The species breeds in eastern North America; the race throughout the range, except for an area occupied by *D. v. waynei* in Virginia and the Carolinas; winters from Mexico to Colombia, and in the West Indies; on the Peninsula in Yucatán, Campeche, and Quintana Roo, including Islas Holbox (Salvin, 1888) and Cozumel.

SPECIMENS. Quintana Roo—Chetumal, 1♀, Dec. 6, 1948; Isla Cozumel, 1♂, Jan. 4, 1♀, Jan. 11, 1949. Yucatán—Xocempich, 1♂, Nov. 28, 2♂, Dec. 5, 1♂, Dec. 9, 1♀, Dec. 30, 1949. Campeche—Ichek, 1♂, Dec. 22, 1949.

HABITAT. Forested areas throughout.

REMARKS. Black-throated Green Warblers are abundant in all forests but are particularly numerous in the rain forest zone.

WEIGHT. A male and female weighed 7.8 and 7.7 grams, respectively.

DENDROICA CERULEA (Wilson).
Cerulean Warbler.

Sylvia cerulea Wilson, Am. Ornith., 2:141, 1810. (Pennsylvania.)

RANGE. A monotypic form breeding in Ontario and the eastern half of the United States; winters in South America; transient in Yucatán (Lawrence, 1869) and on Isla Pérez, Arrecife Alacrán.

SPECIMEN. Yucatán—Isla Pérez, 1♀, Sept. 3, 1952.

REMARKS. Two Cerulean Warblers, one of which was collected, were seen on Isla Pérez. It is, presumably, a very rare species on the Peninsula.

DENDROICA FUSCA (Müller).
Blackburnian Warbler.

Motacilla fusca Müller, Natursyst., Suppl., p. 175, 1776. (French Guiana.)

RANGE. Breeds from eastern Canada south to Minnesota and Connecticut, and in the mountains to South Carolina; winters principally in northern South America and casually in Central America; an uncommon transient in Quintana Roo (Peters, 1913) and Yucatán, and on Cayo Arenas, Banco Campeche; hypothetical winter record from Yucatán (Reynolds, 1886).

SPECIMENS. Yucatán—Xocempich, 1♀, Oct. 4, 1950. Campeche—Cayo Arenas, 1♀, Aug. 31, 1952.

HABITAT. Probably occurs throughout the region during migration.

REMARKS. Renardo's record (1886) of the species in Yucatán during the winter was supposedly supported by a specimen. I, however, believe the record of doubtful validity.

DENDROICA DOMINICA ALBILORA Ridgway.
Yellow-throated Warbler.

Dendroica dominica var. *albilora* Ridgway, Am. Nat., 7:606, 1873. (Belize, British Honduras.)

RANGE. The species breeds from Nebraska and Texas eastward, and in the Bahamas; the nominate race occupies the eastern seaboard, *D. d. flavescens* the Bahamas, and *D. d. albilora* the remainder of the range; *D. d. albilora* winters from Mexico to Costa Rica; recorded in Yucatán, Campeche, including Cayos Arcas, Banco Campeche (Paynter, 1953), and Quintana Roo, including Islas Cozumel (Salvin, 1888), Mujeres (Salvin, 1888), and Holbox.

SPECIMENS. Quintana Roo—Chetumal, 1♀, Oct. 31, 1♀, Nov. 30, 1948; Isla Tamalcab, 1♀, Dec. 12, 1948; Isla Holbox, 1♀, Dec. 19, 1950. Yucatán—Santa Clara, 1♂, Aug. 24, 1950; Xocempich, 1♂, Nov. 7, 1♂, Nov. 12, 1♂, Dec. 9, 1949. Campeche—1♀, Jan. 21, 1951; Pueblo Nuevo, 1♂, Sept. 22, 1950.

HABITAT. Most often found in the vicinity of settlements.

REMARKS. Wherever copra is laid to dry it is almost certain that *D. dominica* will be seen feeding on the flies that swarm over the racks. On several occasions, in different parts of the Peninsula, I have seen Yellow-throated Warblers enter houses through unscreened windows and capture flies on the walls. It appears, therefore, that these birds are attracted by the abundance of food in the towns.

WEIGHT. Two females weighed 9.0 and 9.4 grams.

DENDROICA PENNSYLVANICA (Linnaeus).
Chestnut-sided Warbler.

Motacilla pensylvanica Linnaeus, Syst. Nat., ed. 12, 1:333, 1766. (Pennsylvania.)

RANGE. Breeds in eastern North America; winters from Nicaragua to Panama; recorded as a fall transient several times in Yucatán and once in Campeche, and as a spring transient once in Yucatán (Lawrence, 1869).

SPECIMENS. Yucatán—Xocempich, 1♂, Oct. 4, 1950. Campeche—Ichek, 1♀, Sept. 27, 1950.

DENDROICA CASTANEA (Wilson).
Bay-breasted Warbler.

Sylvia castanea Wilson, Am. Ornith., 2:97, 1810. (Pennsylvania.)

RANGE. A monotypic species which breeds in Canada and the north-eastern United States; winters in Panama and northernmost South America; known as a spring transient in Quintana Roo.

SPECIMENS. Quintana Roo—Chetumal, 1 ♂, 1 ♀, May 6, 1 ♂, May 7, 1949.

HABITAT. Low second growth.

REMARKS. These specimens represent the second record of the Bay-breasted Warbler in Mexico, the first having been taken in Oaxaca (Lawrence, 1876) over 80 years ago.

The species was present in substantial numbers in the spring of 1949. Apparently the Peninsula is part of the normal migration route which probably passes from Central America, up the Peninsula, and across the Gulf of Mexico (Paynter, 1950a).

WEIGHT. The two males, both of which were very fat, weighed 14.2 grams each. The female, which had only a thin layer of fat, weighed 11.8 grams.

DENDROICA DISCOLOR DISCOLOR (Vieillot).
Prairie Warbler.

Sylvia discolor Vieillot, Hist. Nat. Ois. Amér. Sept., 2:37, 1808. ("Antilles.")

RANGE. The species breeds in the eastern half of the United States, in Ontario, and in the Bahamas; the race throughout the range with the exception of Florida, which is occupied by *D. d. collinsi*; winters throughout the Bahamas and the West Indies, and on islands off the coast of Middle America; in Quintana Roo on Islas Mujeres (Salvin, 1888) and Cozumel (Ridgway, 1885), and on Cayos Centro (Griscom, 1926b) and Norte (sight record), Banco Chinchorro.

REMARKS. Prairie Warblers were common on the cays of Banco Chinchorro during 1949. I have not observed them on any of the other islands.

DENDROICA PALMARUM PALMARUM (Gmelin).
Palm Warbler.

Motacilla palmarum Gmelin, Syst. Nat., 1:951, 1789. (Hispaniola.)

RANGE. The species breeds from Mackenzie east to Newfoundland and south to Minnesota and Maine; the race from Manitoba westward; winters in southern Florida, the Bahamas, the Greater Antilles, and in Yucatán

and Quintana Roo, including Islas Holbox, Mujeres, and Cozumel, Cayo Culebra (sight record), and Cayos Centro (Griscom, 1926b) and Norte, Banco Chinchorro.

SPECIMENS. Quintana Roo—Isla Cozumel, 1♂, 1♀, Jan. 3, 1♀, Jan. 4, 1♀, Jan. 5, 1949; Cayo Norte, Banco Chinchorro, 1♂, Feb. 4, 1949; Isla Holbox, 1♂, 1♀, Dec. 17, 1950; Isla Mujeres, 1♂, Dec. 23, 1950. Yucatán—Sisal, 1♂, Jan. 9, 1951.

HABITAT. Usually close to the shore in areas of grass or sand interspersed with low bushes; occasionally in mangroves.

REMARKS. On the islands Palm Warblers are often the most abundant of the wintering land birds. They are less numerous on the mainland, but there are few coastal localities where they are absent.

Cole (1906) collected a single specimen at Chichén Itzá. This is the only record of which I know from the interior of the mainland of Mexico or Central America.

SEIURUS AUROCAPILLUS (Linnaeus).
Ovenbird.

Motacilla aurocapilla Linnaeus, Syst. Nat., ed. 12, 1:334, 1766. (At sea, off Hispaniola.)

RANGE. Breeds in Canada and over much of the United States; winters from Mexico to northern South America; divided into several races, none of which I believe valid; on the Peninsula reported from Yucatán, including Arrecife Alacrán (Paynter, 1953), from Campeche, including Cayos Arcas (Paynter, 1953), and from Quintana Roo, including Islas Holbox, Mujeres, and Cozumel (Salvin, 1888).

SPECIMENS. Quintana Roo—Chetumal, 1♀, Nov. 8, 1♂, Nov. 19, 1948; Ucum, 1♂, Feb. 23, 1952; Bacalar, 1♂, Feb. 17, 1♂, Feb. 18, 1952; Tabi, 1♂, Mar. 12, 1949; 1♀, Mar. 30, 1♂, Apr. 4, 1953. Yucatán—Uxmal, 1♂, Jan. 19, 1951. Campeche—Ichek, 1♂, Sept. 21, 1950; 2 km. N. Aguada Seca, 1♂, Feb. 5, 1951.

HABITAT. Wooded areas throughout.

REMARKS. The Ovenbird has been divided into several races on the basis of very minor characters. The differences between the races are so slight, and so inconsistent, it is not possible to identify, with certainty, more than roughly three-quarters of the breeding specimens.

The amount of overlap allowable between races is a subjective decision involving one's philosophical concepts of "the subspecies." I personally favor much less overlap than is present in the races of the Ovenbird. However, even if one does recognize the races as they are now conceived, it is obvious that the identification of wintering and migrant birds must involve an error of at least twenty-five per cent if the ranges coincide. The worthlessness of such identification is not debatable.

The species is common in the winter throughout the mainland. I have

never see it wintering on any of the islands and presume that is rare or irregular there.

WEIGHT. Four males weighed 12.4, 17.8, 17.8, and 19.4 grams.

SEIURUS MOTACILLA (Vieillot).
Louisiana Waterthrush.

Turdus motacilla Vieillot, Hist. Nat. Ois. Amér. Sept., 2:9, 1808. (Kentucky.)

RANGE. Breeds in southernmost Canada and over most of the eastern half of the United States; winters from Mexico to northern South America; Peninsular records from Yucatán (Boucard, 1883) and Quintana Roo.

SPECIMEN. Quintana Roo—Tabi, 1 ♂, Mar. 15, 1949.

REMARKS. The bird which was collected is the only one I have observed on the Peninsula.

Bent (1953) listed the species as wintering at Mérida and also as a migrant on March 29 in the same city, but he gives no source for these data. If it winters in Yucatán it is extremely rare. It is more probable that it is merely a casual transient.

WEIGHT. The bird weighed 16.4 grams.

SEIURUS NOVEBORACENSIS NOVEBORACENSIS (Vieillot).
Northern Waterthrush.

Motacilla noveboracensis Gmelin, Syst. Nat., 1:958, 1789. (New York.)

RANGE. The species breeds from Alaska and Newfoundland south to the northern United States; the race from Ontario eastward; winters from Mexico to Ecuador; one record from Banco Chinchorro (Griscom, 1926b), and one from Isla Cozumel (Ridgway, 1902), Quintana Roo.

SEIURUS NOVEBORACENSIS NOTABILIS Ridgway.

Seiurus naevius notabilis Ridgway, U. S. Nat'l Mus., Proc., 3:12, 1880. (Black Hills, Wyoming.)

RANGE. This race breeds from Ontario westward, with the exception of the British Columbia region which is occupied by *S. n. linnaeus*; winters from Mexico to northern South America; on the Peninsula recorded from Yucatán and Quintana Roo, including Islas Cozumel (Ridgway, 1885), Mujeres (Salvin, 1888), and Holbox, and Banco Chinchorro; sight records (Paynter, 1953) from Cayos Arcas, Arrecife Triángulo, Cayo Arenas, and Arrecife Alacrán probably referable to this race.

SPECIMENS. Quintana Roo—46 km. W. Chetumal, 1♂, Feb. 11, 1949; Estero Franco, 1♂, Jan. 28, 1949; Laguna Chacabacab, 1♀, May 14, 1949; Cayo Centro, Banco Chinchorro, 1♀, Feb. 5, 1949; Isla Holbox, 1♀, Dec. 18, 1950. Yucatán—Xocem-pich, 1♂, Sept. 29, 1950, 1♂, May 8, 1952; Santa Clara, 1♀, Mar. 27, 1♀, Sept. 14, 1♀, Sept. 2, 1950, 1♀, May 14, 1952.

HABITAT. Vicinity of water during the winter; widespread during migration.

REMARKS. Northern Waterthrushes are fairly common during the winter.

WEIGHT. Two males and two females weighed 15.4 and 15.5 grams, and 13.4 and 15.5 grams, respectively.

OPORORNIS FORMOSUS (Wilson).
Kentucky Warbler.

Sylvia formosa Wilson, Am. Ornith., 3:85, 1811. (Kentucky.)

RANGE. Breeds in the eastern half of the United States; winters from southern Mexico to northernmost South America; in the southern portion of the Peninsula in Quintana Roo and Campeche; transient on Cayos Arcas, Banco Campeche (Paynter, 1953).

SPECIMENS. Quintana Roo—Chetumal, 1♀, Dec. 20, 1949; 25 km. W. Chetumal, 1♂, Aug. 14, 1♂, Aug. 17, 1950. Campeche—Ichek, 1♂, Sept. 21, 1950; Pueblo Nuevo, 1♂, Sept. 22, 1950.

HABITAT. Underbrush of rain forest.

REMARKS. Kentucky Warblers are uncommon and occur only in the wetter forest.

The two specimens collected in mid-August seem to constitute the earliest fall records of the species south of the United States.

WEIGHT. The female weighed 13.7 grams.

GEOTHLYPIS TRICHAS BRACHIDACTYLA (Swainson).
Common Yellowthroat.

Trichas brachidactylus Swainson, Anim. Menag., p. 295, 1837. (Northern Provinces of the United States.)

RANGE. A highly polymorphic species which breeds from Newfoundland and Alaska south to central Mexico; the race from Newfoundland through eastern Canada and the northeastern United States to New Jersey; winters from the West Indies and Mexico to Panama; in Campeche, Yucatán, and Quintana Roo, including Islas Holbox, Mujeres, Contoy (sight record), and Cozumel, and on Cayos Centro and Norte, Banco Chinchorro (sight record), and on Cayo Culebra.

SPECIMENS. Quintana Roo—Chetumal, 1♂, Dec. 21, 1948; Bacalar, 1♂, Feb. 12, 1942; Estero Franco, 1♂, Jan. 27, 1949; Xcalac, 1♀, Feb. 2, 1949; Carrillo Puerto, 1♂, Apr. 17, 1950; Tabi, 1♀, Mar. 17, 1949; Vigía Chico, 2♂, Mar. 29, 1949; Cayo Culebra, 1♂, Apr. 3, 1949; Isla Cozumel, 1♂, Feb. 2, 1951; Isla Holbox, 1♂, 1♀, Dec. 17, 1♂, Dec. 19, 1950; Isla Mujeres, 1♂, 1♀, Dec. 22, 1♂, Dec. 25, 1950. Yucatán—Santa Clara, 2♂, Mar. 25, 1♀, Mar. 27, 1950; Mérida, 1♀, Oct. 19, 1♂, Oct. 20, 1950. Campeche—Ichek, 1♀, Apr. 21, 1952.

HABITAT. Heavy undergrowth, particularly in the vicinity of water.

REMARKS. On the mainland yellowthroats are not very common except in coastal areas or near fresh water. On all of the islands they are abundant.

WEIGHT. Eight males ranged from 8.2 to 12.1 grams, with a mean of 9.60 ± 0.42 . Three females weighed 8.4, 8.7, and 10.1 grams.

GEOTHYLPIS POLIOCEPHALA PALPEBRALIS (Ridgway).
Gray-crowned Yellowthroat.

Chamaethlypis palpebralis Ridgway, Man. No. Am. Bds., p. 526, 1887. (Mirador, Veracruz.)

RANGE. The species ranges from southern Texas through Mexico to Panama; the race from Veracruz through eastern Mexico, including Campeche (Traylor, 1941), Yucatán, and Quintana Roo, to eastern Guatemala and British Honduras.

SPECIMENS. Quintana Roo—Laguna Chacanbacab, 1♂, May 12, 1♂, May 15, 1949; Vigía Chico, 1♂, Apr. 1, 1949. Yucatán—Mérida, 1♀, Oct. 9, 1♀, Oct. 20, 1950; Mérida-Progreso Rd., 1♂, Oct. 3, 1950; Progreso, 1♀, Sept. 7, 1950; Kimbilá, 1♀, Mar. 24, 1951; Santa Clara, 1♀, Jan. 12, 1♀, Aug. 23, 1♂, Aug. 25, 1950, 1♀, May 14, 1♂, July 2, 1952.

HABITAT. Grassy areas interspersed with low bushes.

REMARKS. Miller (1919) has indicated that the differences between the genera *Geothlypis* and *Chamaethlypis* are too slight to warrant separation. Hellmayr (1935) appeared to be in agreement, but nevertheless retained the two genera. I am also unable to appreciate any generic distinction, and believe that *Chamaethlypis* should be merged with *Geothlypis*.

The sparcity of grasslands and marshes on the Peninsula restricts the occurrence of these birds, but in suitable habitats they are abundant.

BREEDING. The birds collected in mid-May at Laguna Chacanbacab were reproductively active.

WEIGHT. Three males weighed 13.3, 15.0, and 15.8 grams.

ICTERIA VIRENS VIRENS (Linnaeus).
Yellow-breasted Chat.

Turdus virens Linnaeus, Syst. Nat., ed. 10, 1:171, 1758. (South Carolina.)

RANGE. The species breeds from northwestern Canada through the United States to central Mexico; the race in the eastern half of the United States; winters from Mexico to Costa Rica; Peninsular records from Campeche (Traylor, 1941), Yucatán, and Quintana Roo, including Isla Cozumel.

SPECIMENS. Quintana Roo—Chetumal, 1♂, Nov. 24, 1948, 1♂, Feb. 28, 1949, 1♂, Oct. 29, 1952; Bacalar, 1♀, Feb. 9, 1♂, Feb. 17, 1952; Ucum, 1♂, Feb. 26, 1952; 24 km. NW. Xtocomo, 1♂, Feb. 24, 1951; Tabi, 1♂, Mar. 9, 1949; Isla Cozumel, 1♀, Jan. 6, 1949. Yucatán—Mérida, 1♂, Oct. 20, 1950.

HABITAT. Dense second growth.

REMARKS. A moderately uncommon winterer.

WEIGHT. Four males weighed 23.0, 25.0, 25.5, and 28.9 grams; one female 28.5 grams.

GRANATELLUS SALLAEI BOUCARDI Ridgway.
Gray-throated Chat.

Granatellus sallaei boucardi Ridgway, U. S. Nat'l Mus., Proc., 8:23, 1885. (Yucatán.)

RANGE. The species ranges from Veracruz and Oaxaca southward, including the entire Yucatán Peninsula, to Guatemala; the race endemic to the Peninsula; the nominate form for the remainder of the range.

SPECIMENS. Quintana Roo—Chetumal, 1♂, Dec. 7, 1948; 24 km. NW. Xtocomo, 1♂, Feb. 23, 1951; Agua Blanca, 1♂, May 31, 1949; Carrillo Puerto, 1♂, Mar. 21, 1949, 1♂, Apr. 22, 1♂, 1♀, June 8, 1♂, June 14, 1♂, June 20, 1950; Tabi, 1♀, Mar. 11, 1♀, Mar. 15, 1♂, Mar. 17, 1♂, Mar. 18, 1949, 1♂, Mar. 11, 1953; Ch'ich', 1♂, May 11, 1950; Xcan, 1♂, Apr. 27, 1949. Yucatán—Xocempich, 1♂, Sept. 28, 1♀, Oct. 2, 1♀, Oct. 3, 1950. Campeche—2 km. N. Aguada Seca, 2♂, Feb. 8, 1951.

HABITAT. Thick stands of deciduous forest or low second growth.

REMARKS. Gray-throated Chats are extremely local, although they often occur in relative abundance. They appear to prefer the deciduous forest zone but when conditions are suitable they sometimes are found in the region of high rain forest.

For example, at Aguada Seca the vegetation is mostly high rain forest, but there is also a low, thick deciduous area of irregular shape, which seems to be the result of shallow or otherwise unsuitable soil, rather than the activities of man. In early February this deciduous area was as dry and leafless as that in northern Yucatán at the same season. *G. s. boucardi*

was present in substantial numbers, even though cut off from other populations by many miles of heavy rain forest in all directions.

This species frequently feeds on army ants.

BREEDING. Males collected on April 27 and on May 31 were recorded as having very enlarged testes. The bird taken in April is in immature plumage.

WEIGHT. Six mature males ranged in weight from 9.2 to 10.6 grams, with a mean of 10.00 ± 0.22 . Three males in immature plumage weighed 8.9, 10.0, and 10.4 grams, and two mature females 8.8 and 9.2 grams.

WILSONIA CITRINA (Boddaert).
Hooded Warbler.

Muscicapa citrina Boddaert, Tabl. Pl. Enl., p. 41, 1783. (Louisiana.)

RANGE. A monotypic form which breeds in the eastern half of the United States; winters from eastern Mexico to Panama, but chiefly in northern Middle America, including the entire Peninsula and Islas Mujeres (Salvin, 1888), Holbox (Salvin, 1888), and Cozumel; migrant on Cayos Arcas, Triángulo Oeste, and Arrecife Alacrán, Banco Campeche (Paynter, 1953).

SPECIMENS. Quintana Roo—Chetumal, 1♂, 1♀, Nov. 12, 1♀, Nov. 22, 1♂, Nov. 25, 1♂, Dec. 12, 1948, 1♀, Aug. 14, 1950; Bacalar, 1♂, Feb. 7, 1♀, Feb. 17, 1♂, 1♀, Oct. 27, 1952; Tabi, 1♀, Mar. 28, 1953; Isla Cozumel, 1♀, Jan. 7, 1949. Yucatán—Xocempich, 1♀, Sept. 30, 1♂, Oct. 3, 1♂, Oct. 4, 1950, 1♂, Apr. 18, 1♀, Sept. 15, 1952; Chemax, 1♂, Mar. 20, 1950. Campeche—Pueblo Nuevo, 1♂, Sept. 22, 1950; Ichek, 1♂, Sept. 25, 1950.

HABITAT. Woodlands throughout, but most numerous in the more humid southern forest.

REMARKS. One of the most abundant visitors.

WEIGHT. Three males weighed 8.3, 9.6, and 10.0 grams; three females 7.1, 9.1, and 9.4 grams.

WILSONIA CANADENSIS (Linnaeus).
Canada Warbler.

Muscicapa canadensis Linnaeus, Syst. Nat., ed. 12, 1:327, 1766. (Canada.)

RANGE. Breeds in Canada, in the northeastern United States, and in the Appalachians south to Georgia; winters from Colombia to Peru; once recorded off the coast of Yucatán.

SPECIMEN. Yucatán—At sea, 30 km. N. Santa Clara, 1♀, Aug. 30, 1949.

SETOPHAGA RUTICILLA (Linnaeus).
American Redstart.

Motacilla ruticilla Linnaeus, Syst. Nat., ed. 10, 1:186, 1758. (Virginia.)

RANGE. Breeds in Canada and most of the United States; winters from central Mexico to northern South America and in the West Indies; Peninsular records from Campeche (Traylor, 1941), from Yucatán (Traylor, 1941), including Cayos Arcas, Cayo Arenas, and Arrecife Alacrán, Banco Campeche (Paynter, 1953), and from Quintana Roo, including Banco Chinchorro (Griscom, 1926b), Isla Mujeres (Salvin, 1888), Isla Holbox (Salvin, 1888), and Isla Cozumel.

SPECIMENS. Quintana Roo—Chetumal, 1 ♂, Nov. 8, 1 ♂, Nov. 19, 1 ♀, Dec. 10, 1948, 1 ♀, Oct. 29, 1952; Carrillo Puerto, 1 ♂, Mar. 5, 1949; Tabi, 1 ♂, Mar. 16, 1949, 1 ♂, Apr. 11, 1953; Xcan, 1 ♂, 1 ♀, Mar. 20, 1950; Isla Cozumel, 1 ♂, Jan. 6, 1949.

HABITAT. Wooded areas throughout.

REMARKS. I am unable to recognize *S. r. tricolor*, a race said to occur in the northern part of the species range, which has been resurrected recently by Wetmore (1949).

The species is common in all wooded areas, including those on the islands.

WEIGHT. Two males and a female weighed 6.7, 6.9, and 6.5 grams respectively.

BASILEUTERUS CULICIVORUS CULICIVORUS (W. Deppe).
Golden-crowned Warbler.

Sylvia culcivora W. Deppe, Preis-Verz. Säug., Vögel, etc., Mexico, p. 2, 1830. (Jalapa, Veracruz.)

RANGE. The species is distributed from central Mexico to Argentina; the race from Puebla and southern Veracruz through southern Mexico, including extreme southern Quintana Roo, to Costa Rica; *B. c. brasherii* ranges from northern Veracruz to Tamaulipas and Nuevo León.

SPECIMENS. Quintana Roo—46 km. W. Chetumal, 1 ♀, Aug. 17, 1950; 24 km. NW. Xtocomo, 1 ♀, Feb. 25, 1 ♂, Feb. 26, 1951; Agua Blanca, 1 ♀, June 1, 1 ♂, June 5, 1949.

HABITAT. Dense, high rain forest.

REMARKS. These specimens, plus one collected at Camp Mengel (= Alvaro Obregón) by Peters (1913), are the only records of this warbler from the Peninsula. Undoubtedly it will be found eventually in the heavy rain forest of Campeche.

BREEDING. The June birds were breeding.

WEIGHT. The weight of two males was 9.2 and 9.6 grams; that of two females 8.3 and 13.9 grams. The breeding female was the heaviest bird, although it was carrying no eggs and did not appear fat.

COEREBA FLAVEOLA CABOTI (Ridgway).
Bananaquit.

Certhiola caboti Ridgway, Am. Nat., 7:612, 1873. (Isla Cozumel, Quintana Roo.)

RANGE. The species occurs throughout the West Indies, with the exception of Cuba, on the islands off the east coast of Central America, in southern Mexico, in Central America, and over much of South America; the race occurs on Isla Cozumel, Isla Holbox (Salvin, 1888), probably on Cayo Culebra (sight record), and on Isla Cancun (Blake, *in litt.*); *C. f. mexicana* from Mexico to Panama, but absent on the mainland of the Peninsula.

SPECIMENS. Quintana Roo—Isla Cozumel, 1 ♀, 1 ♀, Jan. 5, 1 ♂, Jan. 7, 1 ♀, Jan. 10, 1 ♀, Jan. 17, 1949, 1 ♂, May 31, 1 ♂, June 1, 1950.

HABITAT. Second growth of moderate height and in dooryards.

REMARKS. *C. f. caboti* is morphologically closer to the races occurring on St. Andrew's, Old Providence, the Bahamas, and Cayman Islands.

On Isla Cozumel it is fairly abundant in uninhabited regions, but remarkably common in gardens in the center of the village of San Miguel.

Blake (*in litt.*) informed me that in the collections of the Chicago Natural History Museum there is a specimen from Isla Cancun. I saw a single bird on Cayo Culebra which escaped collection, but which doubtless was an example of *D. f. caboti*.

WEIGHT. A male weighed 12.4 grams; three females 11.3, 11.5, and 12.5 grams.

Family ICTERIDAE

GYMNOSTINOPS MONTEZUMA (Lesson).
Montezuma Oropendola. Oropéndola.

Cacicus montezuma Lesson, Cent. Zool., 2:33, 1830. (Mexico.)

RANGE. A monotypic species which ranges from Tamaulipas and Oaxaca through Campeche (Traylor, 1941) and Quintana Roo to Panama.

SPECIMENS. Quintana Roo—Chetumal, 2 ♂, Nov. 25, 1 ♀, Nov. 26, 1 ♂, Nov. 27, 1948; Bacalar, 1 ♂, Feb. 9, 1 ♂, Feb. 15, 1952; Laguna Chacanbacab, 1 ♀, May 21, 1949.

HABITAT. Rain forest.

REMARKS. The species is local and not numerous anywhere on the Peninsula.

BREEDING. Although nests have been observed in several localities none was occupied at the time. The bird taken on May 21 had moderately enlarged gonads.

AMBLYCERCUS HOLOSERICEUS HOLOSERICEUS (W. Deppe.)
Yellow-billed Cacique.

Sturnus holosericeus W. Deppe, Preis-Verz. Säug., Vogel, etc., Mexico, p. 1, 1830. (Alvarado, Veracruz.)

RANGE. The species occurs from Mexico to Bolivia; the race from Tamaulipas southward, including the entire Peninsula, to Colombia.

SPECIMENS. Quintana Roo—Chetumal, 1♂, Nov. 5, 1♀, Dec. 10, 1♀, Dec. 12, 1948, 1♀, Feb. 28, 1949; Bacalar, 1♀, Feb. 7, 1♀, Feb. 10, 1952; Carrillo Puerto, 1♀, Apr. 12, 1♂, Apr. 29, 1950; Tabi, 1♀, Mar. 10, 1949. Yucatán—Xocempich, 1♂, Dec. 29, 1950. Campeche—Champotón, 1♀, Jan. 28, 1951.

HABITAT. Dense undergrowth in deciduous and rain forests.

REMARKS. Caciques are common in the vicinity of towns where there is considerable second growth. They are relatively rare in undisturbed forests.

WEIGHT. A male weighed 78.0 grams; three females 55.1, 56.3, and 58.5 grams.

PSOMOCOLAX ORYZIVORUS IMPACIFUS Peters.
Rice Grackle.

Psomocolax oryzivorus impacifus Peters, Biol. Soc. Wash., Proc., 42:123, 1929. (Pasa Nueva, Veracruz.)

RANGE. The species is distributed from Mexico to Argentina; the race from Veracruz and Oaxaca to Panama; on the Peninsula known from two specimens collected in Quintana Roo (Peters, 1913).

REMARKS. Peters (1913) collected two specimens in one day at Camp Mengel (= Alvaro Obregón). There are no other records, but it is believed that the species, while it may be uncommon, is probably often overlooked.

TANGAVIUS AENEUS AENEUS (Wagler).
Red-eyed Cowbird. Xts'iu.

Psarocolius aeneus Wagler, Isis, 22, col. 758, 1829. (Oaxaca, Oaxaca.)

RANGE. The species is distributed from southern Arizona and Texas to Panama; the race from southern Texas through eastern Mexico, including the entire Peninsula, to Panama; *T. a. assimilis* for the remainder of Mexico,

with the exception of the northwestern portion which is occupied by *T. a. milleri*.

SPECIMENS. Quintana Roo—Chetumal, 1♂, Dec. 27, 1948, 1♂, May 21, 1950; Carrillo Puerto, 1♂, May 24, 1950, Tulum, 2♂, 2♀, Jan. 13, 1949. Yucatán—Xocempich, 1♂, June 13, 1♂, June 19, 1952; Santa Clara, 1♂, Aug. 28, 1950; Mérida-Progreso Rd., 1♀, Sept. 8, 1950. Campeche—Champotón, 1♂, Jan. 24, 1951.

HABITAT. Usually in clearings in the vicinity of villages; occasionally in open country distant from towns.

WEIGHT. Four males weighed 68.6, 70.9, 73.2, and 77.3 grams; two females, 54.2 and 55.1 grams.

MOLOTHRUS ATER ATER (Boddaert).
Brown-headed Cowbird.

Oriolus ater Boddaert, Tabl. Pl. Enl., p. 37, 1783. (Carolina.)

RANGE. The species breeds from Canada to northern Mexico; the race from northeastern Canada through the eastern United States; winters south to southern Mexico; recorded from Isla Cozumel (Sclater, 1886).

REMARKS. In the area of the Peninsula, the species is known only from Isla Cozumel, where Gaumer collected four specimens (Sclater, 1886).

CASSIDIX MEXICANUS MEXICANUS (Gmelin).
Great-tailed Grackle. K'au.

Corvus mexicanus Gmelin, Syst. Nat., 1:357, 1789. (Veracruz.)

RANGE. The species ranges from the southeastern United States through Middle America to northern South America; the race from central Mexico to Nicaragua; on the Peninsula in Campeche (Traylor, 1941), Yucatán, and Quintana Roo, including Isla Mujeres (Salvin, 1888), Isla Contoy (sight record), Isla Cozumel, and Banco Chinchorro.

SPECIMENS. Quintana Roo—Bacalar, 1♂, Feb. 13, 1952; Cayo Centro, Banco Chinchorro, 1♂, Feb. 4, 1949; Isla Cozumel, 1♂, Jan. 4, 1♂, Jan. 9, 1949. Yucatán—Xocempich, 1♂, May 8, 1952; Dzidzantún, 1♂, Jan. 24, 1952; Santa Clara, 1♀, Aug. 29, 1950.

HABITAT. Coastal, insular, and in sizable towns.

REMARKS. The species appears to be particularly plastic in the northern part of its range, where it is divisible into five races, while from central Mexico southward it seems to be rigid and has been divided into only two races, including the nominate. This, however, may be merely a function of the availability of specimens, since large series are necessary before trends in morphological differentiation can be detected in such a polymorphic species. The number of specimens in collections from north-

ern Mexico and the southern United States vastly exceeds that from elsewhere.

Because the northern mainland population has become morphologically differentiated, one would expect to find subspecifically distinct populations on the isolated islands off the Peninsula. This, however, is not the case. The material at hand from the islands is severely limited, but when large series become available, several races may be recognizable.

WEIGHT. Two immature males weighed 206.7 and 202.9 grams.

DIVES DIVES DIVES (W. Deppe).
Melodious Blackbird. Pich.

Icterus dives W. Deppe, Preis-Verz. Säug., Vögel, etc., Mexico, p. 1, 1830. (Valle Real, Veracruz.)

RANGE. The species occurs from southern Mexico to Nicaragua and reappears in Ecuador and Peru; the race in the northern distribution; on the Peninsula in Yucatán (Boucard, 1883), Campeche, and Quintana Roo.

SPECIMENS. Quintana Roo—Chetumal, 1 ♀, May 21, 1950; Laguna Chacabacab, 1 ♂, May 20, 1 ♂, May 21, 1 ♂, 1 ♀, May 22, 1949; Carrillo Puerto, 1 ♂, Apr. 4, 1949, 1 ♂, June 17, 1950. Campeche—Champotón, 1 ♀, Jan. 24, 1951.

HABITAT. Particularly numerous in the vicinity of settlements; less common in undisturbed areas where usually found near fresh water or in forest edges.

BREEDING. The birds collected in May were in full breeding condition. Many were seen carrying nesting material.

WEIGHT. A female weighed 82.6 grams.

ICTERUS GALBULA (Linnaeus).
Baltimore Oriole.

Coracias galbula Linnaeus, Syst. Nat., ed. 10, 1:108, 1758. (Virginia.)

RANGE. A monotypic species breeding over much of the United States and southern Canada east of the Rocky Mountains; winters from southern Mexico to northern South America; recorded on the Peninsula in Campeche (Traylor, 1941), on Cayo Arenas, Banco Campeche (Paynter, 1953), and in Quintana Roo.

SPECIMEN. Quintana Roo—Laguna Chichancanab, 1 ♂, Mar. 10, 1951.

HABITAT. The specimen was taken in an abandoned *milpa*.

REMARKS. Two specimens and one sight record are the only recorded occurrences of the species on the Peninsula.

WEIGHT. The specimen weighed 33.8 grams.

ICTERUS SPURIUS (Linnaeus).
Orchard Oriole.

Oriolus spurius Linnaeus, Syst. Nat., ed. 12, 1:162, 1766. (South Carolina.)

RANGE. The species breeds over much of the eastern United States and in western Mexico south to Jalisco; winters from Mexico to northern South America and in Cuba; visitant throughout the Peninsula and on Islas Holbox and Cozumel (Salvin, 1888); *I. fuertesi*, of northeastern Mexico, probably a race of *I. spurius*.

SPECIMENS. Quintana Roo—Chetumal, 1♂, Nov. 9, 1♂, Dec. 3, 1♀, Dec. 11, 1948, 1♀, Jan. 21, 1♀, Feb. 8, 1♀, Mar. 25, 1949, 1♂, Apr. 15, 1950; Tabi, 1♂, Mar. 11, 3♂, Mar. 14, 1♂, 1♀, Mar. 18, 1949, 1♂, Mar. 25, 1♂, Apr. 2, 1953. Yucatán—Mérida, 1♀, Oct. 20, 1950; Temax, 1♂, Nov. 20, 1951; Dzidzantún, 1♀, Nov. 28, 1951; Santa Clara, 1♀, Mar. 27, 1950. Campeche—2 km. N. Aguada Seca, 1♀, Feb. 10, 1951.

HABITAT. Second growth and fields throughout the Peninsula.

WEIGHT. Four mature males weighed 19.6, 21.4, 21.9, and 22.2 grams; six females ranged from 17.2 to 21.4 grams, with a mean of 19.78 ± 0.67 .

ICTERUS PROSTHEMELAS PROSTHEMELAS (Strickland).
Black-cowled Oriole.

Xanthornus prothemelas Strickland, Cont. Ornith. 1850, p. 120, 1850. (Guatemala.)

RANGE. The species is present on the Bahamas, and from Veracruz and Oaxaca to Panama; *I. p. northropi*, sometimes considered specifically distinct, endemic to the Bahamas; the nominate race for the remainder of the range including the entire Peninsula; *I. wagleri*, of the highlands of Mexico and Central America, possibly conspecific.

SPECIMENS. Quintana Roo—Chetumal, 1♀, Nov. 2, 1♂, Nov. 15, 1♀, Nov. 22, 1♂, Nov. 24, 1♂, Dec. 8, 2♀, Dec. 17, 1♀, Dec. 22, 1♂, 1♀, Dec. 23, 1948, 1♂, June 14, 1949; Xcalac, 1♂, Feb. 2, 1949; Km. 21, Chetumal-Bacalar Rd., 2♂, June 10, 1951; Bacalar, 1♂, 1♀, Feb. 19, 1952; 46 km. W. Chetumal, 1♀, Feb. 13, 1949; Tabi, 1♂, 1♀, Apr. 2, 1953; Xcan, 1♂, Apr. 25, 1♂, Apr. 26, 1♂, Apr. 28, 1949; 15 km. NW. Kantunil-Kín, 1♂, Dec. 31, 1950. Yucatán—Xocempich, 1♂, Dec. 14, 1950. Campeche—20 km. N. Escárcega, 1♀, Mar. 4, 1951.

HABITAT. Most abundant within second growth and forest edges of the rain forest zone; only common locally in the same types of habitats in the zone of deciduous forest.

REMARKS. In the southern portion of the area this is one of the most common and conspicuous icterids.

BREEDING. Birds with fully enlarged gonads were taken in April and

June, while the first indication of reproductive activity was noted in a specimen, in immature plumage, collected on March 4.

WEIGHT. Five males in adult plumage ranged in weight from 26.9 to 30.3 grams, with a mean of 28.68 ± 0.64 .

ICTERUS MESOMELAS MESOMELAS (Wagler).
Yellow-tailed Oriole.

Psarocolius mesomelas Wagler, Isis, 22, col. 755, 1829. (Chacaltianges, Veracruz.)

RANGE. The species is distributed from southern Mexico to Peru; the race from Veracruz and Oaxaca to Honduras; recorded from throughout the Peninsula.

SPECIMENS. Quintana Roo—Bacalar, 1♂, Feb. 19, 1952; Laguna Chacanbacab, 1♀, May 13, 1949, 1♀, Feb. 15, 1951; Tabi, 1♀, Mar. 12, 1949; Xcan, 1♀, Apr. 27, 1♀, Apr. 29, 1949. Yucatán—Sucopó, 1♂, 1♀, Apr. 21, 1949. Campeche—2 km. N. Aguada Seca, 1♂, Feb. 9, 1951.

HABITAT. Forest edges and heavy second growth in all sections of the Peninsula.

REMARKS. This is one of the less common orioles in the region. In the zone of deciduous forest it is of very casual occurrence, but farther south, where the forest is higher, it is more abundant.

BREEDING. The specimen collected on May 13 was in full reproductive activity. The female collected on April 21 had a slightly enlarged ovary.

WEIGHT. Two males weighed 37.6 and 40.0 grams; five females ranged from 33.8 to 38.7 grams, with a mean of 36.32 ± 0.91 .

ICTERUS CHRYSATER MAYENSIS van Rossem.
Yellow-backed Oriole.

Icterus chrysater mayensis van Rossem, Brit. Ornith. Club, Bull., 58:136, 1938. (Peto, Yucatán.)

RANGE. The species ranges from southern Mexico to northern Nicaragua and from Panama to Colombia and Venezuela; the race endemic to Yucatán, Quintana Roo (Salvin, 1888), and Campeche (Traylor, 1941); the nominate race from Veracruz and Chiapas to Nicaragua.

HABITAT. All Peninsular records are from the zone of deciduous forest, or coastal, with the exception of one specimen from the rain forest at Pacaytun, Campeche (Traylor, 1941).

REMARKS. It is assumed that this must be an excessively rare species in the region since neither Legters nor I collected a specimen, although particular attention was paid to icterids.

Traylor (1941) referred his specimen from Pacaytun to the nominate

race, without comment. Mr. E. R. Blake has kindly examined the specimen for me and informed me (*in litt.*) that it is probably more correct to consider it *I. c. mayensis*.

ICTERUS AURATUS Bonaparte.
Orange Oriole.

Icterus auratus (Du Bus Ms.) Bonaparte, Conspec. Gen. Av., 1:435, 1850. (Yucatán).

RANGE. Endemic to Yucatán, Quintana Roo, and Campeche.

SPECIMENS. Quintana Roo—Chetumal, 1 ♂, Nov. 15, 1948; Carrillo Puerto, 1 ♀, June 21, 1950; Tabi, 1 ♀, Mar. 26, 1953; 5 km. NW. Vigía Chico, 1 ♂, Apr. 8, 1949; Xcan, 1 ♂, Apr. 28, 1 ♀, Apr. 29, 1949. Yucatán—Temax, 1 ♂, Oct. 22, 1950; Xocempich, 1 ♂, Apr. 16, 1952; Uxmal, 1 ♂, Jan. 16, 1951. Campeche—Ichek, 1 ♂, Apr. 25, 1 ♂, May 23, 1952; Champotón, 1 ♀, Jan. 21, 1 ♂, Jan. 23, 1951.

HABITAT. I have found the species only in, or on the edges of, abandoned *milpas* with heavy second growth. It appears to be more common in the zone of deciduous forest, in the northern portion of the Peninsula, than elsewhere.

REMARKS. *Icterus auratus* is a moderately common species in suitable habitats. It is more shy than *I. cucullatus* and *I. gularis*, two species with which it often occurs.

BREEDING. Breeding specimens have been taken in April and May.

WEIGHT. Five males ranged in weight from 30.4 to 36.1 grams, with a mean of 33.56 ± 0.87 ; two females 26.7 and 28.3 grams.

ICTERUS GULARIS YUCATANENSIS Berlepsch.
Black-throated Oriole. Yuya. Yuyum.

Icterus gularis yucatanensis Berlepsch, Auk, 5:454, 1888. (Yucatán.)

RANGE. The species ranges from northeastern Mexico to Nicaragua; the race endemic to the Yucatán Peninsula, including Isla Cozumel (Salvin, 1888), and adjacent British Honduras; *I. g. tamaulipensis* ranges through eastern Mexico from Tamaulipas to extreme southwestern Campeche.

SPECIMENS. Quintana Roo—Chetumal, 1 ♀, Nov. 4, 1 ♂, Nov. 8, 1 ♂, Dec. 22, 1948, 1 ♀, Mar. 12, 1949; Carrillo Puerto, 1 ♀, Apr. 7, 1949, 1 ♂, June 6, 1950; Xcan, 1 ♂, Apr. 29, 1949, 1 ♀, Apr. 9, 1952. Yucatán—Sucopó, 1 ♂, Apr. 21, 1949; Xocempich, 1 ♀, Dec. 7, 1950, 1 ♀, Apr. 11, 1952; Temax, 1 ♂, Oct. 22, 1951; Mérida, 1 ♂, Oct. 5, 1 ♂, Oct. 9, 1 ♂, Oct. 19, 1950; 10 km. N. Mérida, 1 ♂, Sept. 6, 1950; Sisal, 1 ♀, Jan. 6, 1951; Uxmal, 1 ♀, Jan. 16, 1 ♂, 2 ♀, Jan. 17, 1 ♂, 1 ♀, Jan. 19, 1951. Campeche—Champotón, 1 ♀, Jan. 22, 1 ♂, Jan. 23, 1 ♂, 1 ♀, Jan. 24, 1 ♂, Jan. 25, 2 ♂, 1 ♀, Jan. 26, 1951.

HABITAT. Found, almost invariably, in open country with scattered trees and low second growth, such as is found in the vicinity of villages.

REMARKS. I am unable to distinguish any difference in linear measurements between this race and *I. g. tamaulipensis*, although Peninsular specimens appear smaller in mass, an impression which may be confirmed when weights for *I. g. tamaulipensis* are available.

The Yucatán form differs, however, in being generally more orange, rather than yellow, and in having a slightly less heavy bill. Neither character is fully trenchant, particularly in females, and some specimens cannot be identified with certainty.

The species is very common in the heavily cultivated regions of Yucatán. I have never seen it on Isla Cozumel although Gaumer (Sclater, 1886) collected a number of specimens there.

BREEDING. Several birds collected in April were found to be in breeding condition.

WEIGHT. Seven adult males ranged in weight from 56.4 to 64.3 grams, with a mean of 59.11 ± 0.95 ; three females 47.4, 53.5, and 53.6 grams.

ICTERUS GULARIS TAMAULIPENSIS Ridgway.

Icterus gularis tamaulipensis Ridgway, Wash. Acad. Sci., Proc., 3:152, 1901. (Alta Mira, Tamaulipas.)

RANGE. The race occurs in Tamaulipas, through eastern Mexico, to extreme southwestern Campeche (Brodkorb, 1943a).

REMARKS. Brodkorb (1943a) referred several specimens from Palizada to this race.

ICTERUS CUCULLATUS IGNEUS Ridgway.
Hooded Oriole. Yuya. Xom-xanil. Yuyum.

Icterus cucullatus igneus Ridgway, U. S. Nat'l Mus., Proc., 8:19, 1885. (Yucatán.)

Icterus cucullatus masoni Griscom, Am. Mus. Novitates, No. 235:18, 1926. (Manatee, British Honduras.)

Icterus cucullatus duplexus Nelson, Biol. Soc. Wash., Proc., 14:173, 1901. (Isla Mujeres, Quintana Roo.)

Icterus cucullatus cozumelae Nelson, Biol. Soc. Wash., Proc., 14:173, 1901. (Isla Cozumel, Quintana Roo.)

RANGE. The species is distributed from the southwestern United States through Mexico to British Honduras; the race from eastern Tabasco through the entire Peninsula including Islas Cozumel, Mujeres, Contoy, and Holbox to British Honduras; the nominate race contiguous in Tabasco.

SPECIMENS. Quintana Roo—Chetumal, 1♂, Nov. 23, 1948, 1♂, Mar. 25, 1949, 1♂, —, 1950; Xcalac, 1♂, Feb. 2, 1949; Carrillo Puerto, 1♂, Apr. 9, 1949; Vigía Chico, 1♂, Mar. 29, 1949; 5 km. NW. Vigía Chico, 1♂, Apr. 8, 1949; Boca Iglesia, 2♂, Dec. 28, 1950; Tabi, 1♂, Mar. 10, 1♂, Mar. 15, 1949, 1♀, Mar. 23, 1953; Ch'ich', 1♂, May 12, 1950; Xcan, 1♂, Apr. 25, 2♂, Apr. 28, 1949; Isla Holbox, 2♂, 1♀, Dec. 17, 1♀, Dec. 18, 1♂, 1♀, Dec. 20, 1950; Isla Mujeres, 2♂, 1♀, 1♀, Dec. 23, 2♂, Dec. 26, 1950; Isla Contoy, 1♂, Dec. 27, 1950; Isla Cozumel, 1♂, Jan. 4, 1♂, Jan. 12, 1♀, Jan. 17, 1949. Yucatán—El Cuyo, 1♂, Dec. 10, 1950; Santa Clara, 1♂, May 6, 1940, 1♂, Aug. 24, 1♀, 1♀, Sept. 2, 1♀, Sept. 5, 1950; Sisal, 1♀, 1♀, Jan. 6, 1♂, Jan. 7, 1951; Mérida, 1♀, Oct. 7, 1950; Mérida-Progreso Rd., 1♂, Sept. 8, 1950; Xocempich, 1♂, Nov. 17, 1949; Yotzonot, 1♂, 1♀, May 21, 1949. Campeche—Champton, 1♂, Jan. 23, 1951.

HABITAT. Most abundant in arid coastal and insular areas, particularly in *cocales*; much less common inland, where usually found in the vicinity of villages.

REMARKS. Although four races of this species have been described from the Peninsula and its islands, I am able to recognize only *I. c. igneus*.

The male of *I. c. masoni* is described as differing from *I. c. igneus* in being smaller, in having more extensive white edgings on the primaries, and in being more pale. The female is said to differ in the same characters, except that it is deeper yellow than *I. c. igneus*.

An examination of specimens from throughout the supposed range of the race, including the type and the original series, indicates that there is no consistent difference in size between birds from coastal Quintana Roo and those from Yucatán. Moreover, my specimen from Vigía Chico, a locality included in the type series, is among the largest I have seen from the Peninsula. The white edgings on the wings are variable and, as in *Mimus gilvus*, fragile and seldom found intact. Fresh material from along the coast of Quintana Roo is comparable to that of equal age from elsewhere on the Peninsula. The coloration is highly variable throughout the region and no consistent pattern of variation can be discerned.

I. c. duplexus is said (Nelson, 1901, p. 173) to occur on "Mujeres Island and occasional[ly] on [the] adjacent shore of eastern Yucatan [= Quintana Roo]." A race restricted to Isla Mujeres might be expected but one which also ranges casually on the mainland would be surprising and is immediately suspect. The race is described as being a form in which the males are very yellow, in this respect resembling *I. c. nelsoni* of north-western Mexico. Although not stated, it is implied that this is the only character by which the race differs from *I. c. igneus*.

As has been noted above, the coloration of the species is highly variable. Even specimens collected on the same day at a given locality exhibit marked differences. Specimens from Isla Mujeres are no less variable and cannot be distinguished from those of the mainland.

The male of *I. c. cozumelae* is described as being similar in coloration to *I. c. igneus* but differs in that it is slightly smaller (presumably meaning the wing and tail) and has a larger bill. The female is said to be paler

below, grayer above, and decidedly smaller than the mainland race. I have examined seven specimens from Isla Cozumel and am unable to find any means by which they may be distinguished from Peninsular birds.

Hooded Orioles are ubiquitous in suitable habitats.

BREEDING. The male collected on March 25 was in breeding condition although it is not in fully adult plumage. This is the earliest record available. Many specimens collected in April were found breeding but, unfortunately, there are no data for later in the season.

WEIGHT. Ten males ranged in weight from 24.4 to 29.4 grams, with a mean of 26.98 ± 0.52 ; six females from 21.3 to 26.3 grams, with a mean of 23.20 ± 0.67 .

AGELAIUS PHOENICEUS PALLIDULUS Van Tyne and Trautman.
Red-winged Blackbird. Chuleb.

Agelaius phoeniceus pallidulus Van Tyne and Trautman, Univ. Mich., Mus. Zool., Occasional Papers, No. 496:1, 1946. (3 km. S. Progreso, Yucatán.)

RANGE. The species occurs from Canada to Costa Rica, and in the Bahamas and Cuba; the race in Yucatán, Quintana Roo, including Islas Cozumel (Salvin, 1888) and Holbox, and probably in at least the northern half of Campeche; *A. p. richmondi* contiguous in Petén, southwestern Campeche, and probably British Honduras; ranges very poorly known.

SPECIMENS. Quintana Roo—Laguna Chacanbacab, 1♂, May 11, 1♀, May 12, 1♂, 1♀, May 16, 1♂, May 18, 1♀, May 21, 1949; Ucum, 2♂, Feb. 20, 1952; Vigía Chico, 2♂, Mar. 29, 1♀, Mar. 30, 1949; Isla Holbox, 1♂, Dec. 19, 1950. Yucatán—Celestún, 3♂, Jan. 11, 1951; Santa Clara, 1♂, May 6, 1949, 1♂, Aug. 7, 1♀, Aug. 8, 1♀ Aug. 22, 1♀, Aug. 23, 1♀, Aug. 28, 1♂, Aug. 29, 2♂, 1♀, Sept. 2, 1♂, Sept. 12, 3♀, Dec. 5, 1950, 1♂, May 2, 1♀, May 14, 2♂, 2♀, May 15, 1952.

HABITAT. Marshes, consequently very local on the Peninsula.

REMARKS. I am barely able to distinguish this race from *A. p. richmondi*, from which it is supposed to differ in being larger, in having a more slender and rounded bill, and in being paler in the female.

In addition to the specimens in this collection, I have examined a portion of Van Tyne and Trautman's original series of *A. p. pallidulus*. I am unable to confirm their contention that the Peninsular race is larger than *A. p. richmondi* or, for that matter, larger than *A. p. matudae* which they also recognize, but which I reject for the same reasons as Wetmore (1943). Although their data are presented in a manner precluding statistical treatment, it is obvious, merely from inspection, that the measurements of *A. p. richmondi*, *A. p. "matudae,"* and *A. p. pallidulus* overlap to an extreme degree. Even if the difference between the means are "statistically significant" they are certainly not distinct enough to be used as racial criteria, unless one wishes to condone the most minute splitting.

I cannot recognize any difference in color between females from Yucatán and those from within the range of *A. p. richmondi*. Both populations are exceedingly variable and no consistent pattern can be discerned.

This leaves only the bill as a possible character for differentiating the Peninsular race. While there is a tendency for Peninsular specimens to have bills which are less angular than those of birds from elsewhere, it is a very inconsistent character and it is possible to find individuals from, for example, Veracruz which have bills that are less angular than some northern Yucatán birds, even including those in the original series of *A. p. pallidulus*. I am able to recognize, however, a definite, but slight, tendency for Peninsular birds to have bills which are more slender than those of *A. p. richmondi*.

All the specimens in the present series may be considered referable to *A. p. pallidulus*, with the possible exception of the two males from Ucum. These birds have heavy bills which are comparable to those of *A. p. richmondi*. Specimens from elsewhere in southern Quintana Roo, including the large series collected by Peters (1913) along the Río Hondo, are slender billed, apparently leaving Ucum an isolated pocket of atypical birds. The difference between the heavy-billed and the slender-billed forms is so subjective there seems to be no reason to attempt to place much emphasis on variations far south on the Peninsula. Southern Quintana Roo is probably a zone of intergradation and only extensive series from throughout the region will enable one to detect and describe the phenomenon.

I have examined a single male from Isla Cozumel and find it typical of *A. p. pallidulus*.

BREEDING. The birds from Laguna Chacanbacab had fully enlarged gonads in mid-May and are presumed to have been breeding, although no nests could be found.

WEIGHT. These specimens exhibit an unusually wide range in weight. No explanation of the phenomenon is possible with the data available. Nine adult males ranged from 44.8 to 57.8 grams, with a mean of 51.11 ± 4.7 . Four adult females weighed 29.0, 29.8, 32.5, and 32.6 grams.

AGELAIUS PHOENICEUS RICHMONDI Nelson.

Agelaius phoeniceus richmondi Nelson, Auk, 14:58, 1897. (Tlacotalpam, Veracruz.)

RANGE. The race occurs from Tamaulipas southward through Veracruz and Tabasco to southwestern Campeche (Brodkorb, 1943a; Traylor, 1941), and through Petén to Costa Rica.

REMARKS. I have examined the series collected by Traylor (1941) at Pacaytun and find it referable to *A. p. richmondi*.

STURNELLA MAGNA GRISCOMI Van Tyne and Trautman.
Meadowlark.

Sturnella magna griscomi Van Tyne and Trautman, Univ. Mich., Mus. Zool., Occasional Papers, No. 439:7, 1941. (Progreso, Yucatán.)

RANGE. The species ranges from eastern Canada through the eastern and central United States southward through Middle America to Brazil; the race endemic to Yucatán and not contiguous with other races; *S. m. inexpectata* occurs from Petén and British Honduras to Nicaragua; *S. m. mexicana* from Veracruz and Oaxaca to Tabasco.

SPECIMENS. Yucatán—Santa Clara, 1♀, Jan. 12, 1♀, Mar. 25, 1♀, Sept. 14, 1♂, 3♀, Dec. 5, 1♀, Dec. 6, 1950; 1♂, Nov. 10, 1♂, 1♀, Nov. 17, 1951; 1♀, Aug. 10, 1952.

HABITAT. Confined to the arid coastal scrub of northern Yucatán.

REMARKS. Meadowlarks are restricted to a narrow belt along the coast which extends from the vicinity of Progreso east to Río Lagartos. They are fairly common within this zone.

DOLICHONYX ORYZIVORUS (Linnaeus).
Bobolink.

Fringilla oryzivora Linnaeus, Syst. Nat., ed. 10, 1:179, 1758. (South Carolina.)

RANGE. A monotypic species breeding from southern Canada southward to the central United States; winters in South America; appears to be a rare transient on the Peninsula where known from Yucatán and Isla Cozumel, Quintana Roo (Sclater, 1886).

Family THRAUPIDAE

TANAGRA AFFINIS AFFINIS Lesson.
Scrub Euphonia. Chinchin-bakal.

Tanagra affinis Lesson, Rev. Zool., 5:175, 1842. (Realejo, Nicaragua.)

RANGE. The species occurs from Mexico to Costa Rica; the race from Tamaulipas southward, through the entire Peninsula, including Isla Cozumel (Salvin, 1888), to Costa Rica; *T. a. godmani* from Sonora south to Guerrero.

SPECIMENS. Quintana Roo—Carrillo Puerto, 1♂, Apr. 7, 1949, 1♀, June 27, 1950; Tabi, 1♂, 1♀, Apr. 4, 1953. Yucatán—Santa Clara, 1♂, 1♀, Aug. 26, 1950. Campeche—Ichek, 1♀, May 23, 1952; Santa Rita, 1♂, Dec. 21, 1949; 2 km. N. Aguada Seca, 1♀, Feb. 7, 1951.

HABITAT. Generally in deciduous forest and scrub; very rarely in rain forest.

REMARKS. The presence of this species in the rain forest near Aguada Seca, Campeche, is noteworthy since it is the only time I have observed it outside the more arid regions. In Yucatán it is often very abundant and is one of the principal cage birds in the market at Mérida.

BREEDING. The pair collected on April 4 was in full breeding condition.

WEIGHT. A female weighed 10.4 grams.

TANAGRA LAUTA LAUTA Bangs and Penard.
Yellow-throated Euphonia. Chinchin-bakal.

Tanagra lauta lauta Bangs and Penard, Harvard, Mus. Comp. Zool., Bull., 63:35, 1919. (Guatemala.)

RANGE. The species is distributed from Mexico to Panama; the race from Tamaulipas southward, through Campeche (Traylor, 1941), Yucatán, and Quintana Roo, to Nicaragua.

SPECIMENS. Quintana Roo—Chetumal, 2♂, Nov. 15, 1♀, Nov. 18, 1♂, Dec. 3, 1♀, Dec. 6, 1948, 1♂, May 19, 1950; 46 km. W. Chetumal, 1♂, Feb. 12, 1949; Bacalar, 1♂, Feb. 18, 1952; Ucum, 1♂, Feb. 21, 1♀, Feb. 23, 1952; Carrillo Puerto, 1♂, 1♀, Mar. 5, 1♀, Apr. 2, 1♂, Apr. 7, 1♀, Apr. 8, 1949, 1♂, Apr. 22, 1♀, May 17, 1♂, June 8, 1950; Ch'ich', 1♀, May 6, 1♂, May 8, 1950; Xcan, 1♂, Apr. 23, 1949, 1♀, Sept. 26, 1♂, Sept. 28, 1951; Kantunil-Kín, 1♀, Apr. 23, 1949. Yucatán—Xocempich, 1♂, Dec. 20, 1♂, Dec. 21, 1950.

HABITAT. Generally distributed throughout the region except in the low scrub and the interior of heavy rain forest; most abundant in thinned rain forest and high second growth in the vicinity of villages.

REMARKS. I have examined a series of over 30 birds from the Peninsula and nearly 50 from other parts of the range of the race. In the combined series it is found that the palest females and the smallest examples of both sexes are Peninsular birds. However, the vast majority of specimens, in both series, overlap completely. This is probably a case of incipient subspeciation.

BREEDING. The only record available is that of a male with slightly enlarged testes on February 12.

WEIGHT. The weight of five males was 11.8, 12.6, 13.4, 13.9, and 14.3 grams; four females 13.1, 13.2, 13.8, and 14.6 grams.

TANAGRA GOULDI GOULDI (Sclater).
Olive-backed Euphonia.

Euphonia gouldi Sclater, Zool. Soc. London, Proc., 25:66, 1857. (Guatemala.)

RANGE. The species is distributed from southeastern Mexico to Panama; the race from Veracruz and Oaxaca to Costa Rica; on the Peninsula known

from a single specimen collected at Alvaro Obregón [= Camp Mengel], Quintana Roo (Peters, 1913).

THRUPIS EPISCOPUS DIACONUS (Lesson).
Blue-gray Tanager.

Tanagra diaconus Lesson, Rev. Zool., 5:175, 1842. (Realejo, Nicaragua.)

RANGE. The species ranges from southern Mexico to Brazil; the race from Veracruz and Oaxaca to Panama; on the Peninsula in extreme southwestern Campeche (Brodkorb, 1943a) and in southern Quintana Roo.

SPECIMENS. Quintana Roo—Chetumal, 1 ♀, Oct. 30, 1 ♂, Nov. 2, 1948; Bacalar, 1 ♀, Feb. 16, 1952.

HABITAT. I have observed the species only in cultivated trees in towns in the zone of high rain forest.

REMARKS. Blue-gray Tanagers are exceedingly rare on the Peninsula. Peters (1913) collected three along the Río Hondo and Brodkorb (1943a) recorded a single bird from Palizada. A number were found in a fruit tree in the center of Chetumal during the last week of October and the first week of November. As soon as the fruit was gone the birds disappeared and none was seen until the following June, when a single bird was observed in a shade tree.

WEIGHT. A male weighed 32.2 grams.

THRUPIS ABBAS (W. Deppe).
Yellow-winged Tanager.

Tanagra abbas W. Deppe, Preis.-Verz. Säug., Vogel, etc., Mexico, p. 2, 1830. (Jalapa, Veracruz.)

RANGE. A monotypic form which ranges from Tamaulipas and San Luis Potosí south to Nicaragua; on the Peninsula in Yucatán (Hellmayr, 1936), Campeche (Traylor, 1941), and Quintana Roo.

SPECIMENS. Quintana Roo—Chetumal, 1 ♂, June 28, 1949; 46 km. W. Chetumal, 1 ♂, Aug. 22, 1950; Ucum, 1 ♀, Feb. 20, 1 ♀, Feb. 21, 1952; Carrillo Puerto, 1 ♀, Apr. 2, 1949; Xcan, 1 ♂, 1 ♀, Apr. 25, 1949; Kantunil-Kín, 1 ♂, Apr. 23, 1949.

HABITAT. In the rain forest zone in moderately wooded areas, forest edges, and orchards.

REMARKS. Although this species occurs within the rain forest region it shuns heavy forest and is found in more open situations.

A single specimen listed by Hellmayr (1936) is the only Yucatán record known to me.

BREEDING. Breeding specimens were taken in late April and late June.

WEIGHT. Two breeding males weighed 44.2 and 44.5 grams; a breeding female 48.4 grams.

For a matter of record, two males and a female collected in Chiapas in September weighed 44.7, 46.9, and 45.8 grams, respectively.

SPINDALIS ZENA BENEDICTI Ridgway.
Stripe-headed Tanager.

Spindalis benedicti Ridgway, Biol. Soc. Wash., Proc., 3:22, 1885. (Isla Cozumel, Quintana Roo.)

RANGE. The species occurs in the Bahamas and Greater Antilles, and on Isla Cozumel; the race endemic to Isla Cozumel, Quintana Roo.

SPECIMENS. Quintana Roo—Isla Cozumel, 1♂, Jan. 3, 1♂, Jan. 6, 1♂, 1♀, Jan. 9, 1♂, Jan. 10, 1♂, 1♀, Jan. 17, 1949; 1♂, May 20, 1950, 1♂, Feb. 1, 1951, 1♂, 1♀, June 7, 1952.

HABITAT. Second growth and thinly wooded areas.

REMARKS. This tanager is a common and conspicuous element of the island's avifauna. It is most abundant close to San Miguel where the vegetation is considerably modified by cutting.

WEIGHT. Five males weighed 26.8, 27.3, 31.0, 31.5, and 35.2 grams; two females 27.8 and 31.0 grams.

PHLOGOTHRAUPIS SANGUINOLENTA SANGUINOLENTA (Lesson).
Crimson-collared Tanager.

Tanagra sanguinolentus Lesson, Cent. Zool., p. 107, 1831. (Mexico.)

RANGE. The species occurs from southern Mexico to Panama; the race from Veracruz and Oaxaca to Honduras; Peninsular records from along the Río Hondo, Quintana Roo (Peters, 1913).

REMARKS. Peters (1913) obtained several specimens at Xcopen and Camp Mengel [= Alvaro Obregón]. These remain the only records from the Peninsula.

PIRANGA RUBRA RUBRA (Linnaeus).
Summer Tanager.

Fringilla rubra Linnaeus, Syst. Nat., ed. 10, 1:181, 1758. (South Carolina.)

RANGE. The species breeds over much of the eastern and southwestern United States and northern Mexico; the race breeds in the eastern part of the range and winters from central Mexico to South America; winters throughout the Peninsula, including Isla Cozumel (Salvin, 1888); re-

corded as autumn transient on Cayos Arcas and Triángulo Oeste of Banco Campeche (Paynter, 1953).

SPECIMENS. Quintana Roo—Chetumal, 1 ♂, Nov. 8, 1 ♂, Nov. 27, 1 ♀, Nov. 29, 1 ♂, Dec. 4, 1 ♀, Dec. 11, 1 ♀, Dec. 16, 1 ♂, Dec. 18, 1948; Bacalar, 1 ♂, Jan. 28, 1951; Ucum, 1 ♀, Feb. 21, 1952; 15 km. NW. Kantunil-Kín, 1 ♀, Dec. 30, 1950. Yucatán—Xocempich, 1 ♀, Nov. 16, 1949, 1 ♀, Dec. 12, 1950. Campeche—Ichek, 1 ♂, Nov. 26, 1952; Cayos Arcas, 1 ♀, Aug. 29, 1952.

HABITAT. Second growth and thinly wooded districts throughout the Peninsula.

REMARKS. A common visitant.

WEIGHT. An adult male collected in the winter weighed 29.5 grams.

PIRANGA ROSEO-GULARIS ROSEO-GULARIS (Cabot).
Rose-throated Tanager. X-Eret.

Pyranga roseo-gularis Cabot, Boston Soc. Nat. Hist., Jour., 5:416, 1846. (Road from Chemax [Yucatán] to Yalahao, Yucatán [= Yalahau, Quintana Roo].)

RANGE. The species is endemic to the Yucatán Peninsula, including adjacent Petén; the race confined to Yucatán, northern Campeche, and northwestern Quintana Roo; *P. r. tincta* contiguous in the south; *P. r. cozumelae* endemic to Isla Cozumel.

SPECIMENS. Quintana Roo—Tabi, 1 ♀, Mar. 17, 1949; 1 ♂, Mar. 23, 1 ♂, 1 ♀, Mar. 27, 1 ♂, Mar. 31, 1 ♂, Apr. 13, 1953. Yucatán—Xocempich, 1 ♂, May 11, 1949, 1 ♂, Jan. 11, 1951. Campeche—Ichek, 1 ♂, Dec. 24, 1949.

HABITAT. Edges of deciduous forest.

REMARKS. This endemic species is moderately common.

BREEDING. The bird collected on March 17 exhibited a slightly enlarged ovary; those collected on April 25 and May 11 were breeding.

WEIGHT. A male and female weighed 23.3 and 23.2 grams, respectively.

PIRANGA ROSEO-GULARIS TINCTA Paynter.

Piranga roseo-gularis tincta Paynter, Yale Peabody Mus., Postilla, No. 4:1, 1950. (Chetumal, Quintana Roo.)

RANGE. Southern Campeche, all of Quintana Roo, with the exception of the northwestern portion, and probably much of Petén; subspecific identity of bird from Isla Mujeres (Salvin, 1888) unknown.

SPECIMENS. Quintana Roo—Chetumal, 1 ♂, Nov. 12, 1 ♂, Nov. 15, 2 ♂, Dec. 10, 1948; 1 ♀, Jan. 22, 1949, 1 ♂, Oct. 22, 1952; Carrillo Puerto, 1 ♀, Mar. 4, 2 ♂, Mar. 5, 1 ♀, Apr. 11, 1949, 1 ♂, 1 ♀, Apr. 15, 1 ♂, Apr. 20, 1 ♂, June 5, 1 ♂, June 7, 1 ♂, June 10, 1 ♂, June 12, 1950; Kantunil-Kín, 1 ♂, 1 ♀, Apr. 23, 1949; 15 km. NW. Kantunil-Kín, 1 ♂, Dec. 12, 1 ♂, Dec. 14, 1950, 1 ♂, Jan. 1, 1951. Campeche—20 km. N. Escárcega, 1 ♀, Mar. 4, 1951.

HABITAT. Edges of rain forest.

REMARKS. Several specimens of this species have been collected in the period since *P. r. tincta* was described. These birds have provided considerable information and have necessitated several modifications in the range and characters of the race as originally described.

The acquisition of a larger series of spring and summer birds shows that the darker dorsal and ventral colors, as well as the buffy wash on the belly, are noticeable only in fresh plumage. It is unfortunate that these are the characters by which the races must be distinguished.

Another feature brought to light is the fact that the females of *P. r. tincta* are noticeably darker on the back than the females of the nominate form. Previously it was believed they differed only in being more buffy below.

At the time the race was described it appeared possible that the tail of *P. r. tincta* was shorter than that of the other races. A considerably larger number of measurements now indicates that apparently no significant difference exists.

Salvin (1888) recorded a specimen of *P. roseo-gularis* from Isla Mujeres which he claimed is similar to specimens from Isla Cozumel, although he did not believe the insular and mainland populations were separable. In view of the contradictory nature of this analysis it does not appear warranted to attempt to assign the specimen to one race or the other until it has been examined. I did not observe the species on the island. Although it seems to be a generally unsatisfactory habitat for this tanager, it does not appear completely ill-suited and there is no reason to doubt the veracity of Salvin's (1888) record.

WEIGHT. Eight males ranged from 22.5 to 25.1 grams, with a mean of 23.92 ± 1.35 . Three females weighed 20.7, 21.6, and 22.0 grams. It has been noted (Paynter, 1950b) that the males from Chetumal were significantly heavier than those from Carrillo Puerto. There are no additional weight data to test this assumption further.

PIRANGA ROSEO-GULARIS COZUMELAE Ridgway.

Piranga roseo-gularis cozumelae Ridgway, Wash. Acad. Sci., Proc., 3:149, 1901. (Isla Cozumel, Quintana Roo.)

RANGE. Endemic to Isla Cozumel.

SPECIMENS. Quintana Roo—Isla Cozumel, 1♂, 1♀, Jan. 5, 1♂, Jan. 6, 1949, 1♂, June 4, 1952.

REMARKS. I agree with Griscom (1926b) that this is one of the least strongly characterized of the Cozumel endemics.

WEIGHT. An adult male and a female weighed 22.3 and 22.9 grams, respectively; an immature male, 24.1 grams.

PIRANGA OLIVACEA (Gmelin).
Scarlet Tanager.

Tanagra olivacea Gmelin, Syst. Nat., 1:889, 1789. (Canada.)

RANGE. Breeds in eastern North America west to Manitoba and south to Oklahoma and Georgia; winters in South America; transient, recorded in the spring, in Quintana Roo and Yucatán.

SPECIMENS. Quintana Roo—Chetumal, 1♂, Apr. 14, 1♂, May 5, 1949. Yucatán—Xocempich, 1♂, Apr. 16, 1952; Dzidzantún, 1♂, Apr. 26, 1952.

HABITAT. The specimens collected in Chetumal came from an area of extensive, high second growth.

REMARKS. The species is probably more common than these few records would indicate, but very little field work has been done during the appropriate season.

The species has been recorded as early as April 1 (Paynter, 1950a), but this is a typographical error and should read April 14.

WEIGHT. The birds from Chetumal, both of which were very fat, weighed 36.8 and 38.3 grams.

HABIA RUBICA NELSONI (Ridgway).
Red-crowned Ant-Tanager.

Phoenicothraupis rubica nelsoni Ridgway, U. S. Nat'l Mus., Bull., 50:145, 1902. ("Peninsula of Yucatan (Puerto Morelos) [= Quintana Roo] including Campeche (Apazote).")

RANGE. The species occurs from Mexico to Argentina; the race in Yucatán (Boucard, 1883), Campeche (Ridgway, 1902), and Quintana Roo; *H. r. rubicoïdes*, which is contiguous in southern Campeche and possibly in southern Quintana Roo, ranges from Oaxaca and Veracruz through Petén to British Honduras.

SPECIMENS. Quintana Roo—Estero Franco, 1♂, Jan. 26, 1949; Tabi, 1♂, Mar. 8, 1949; 15 km. NW. Kantunil-Kín, 1♂, Dec. 14, 1♂, Dec. 31, 1950, 1♂, 1♀, Jan. 1, 1951.

HABITAT. Underbrush of rain forest; may occur at times in deciduous forest, although records doubtful.

REMARKS. The species has been recorded from Chichén Itzá by Chapman (1896). It appears that this is only a sight record, and since Chapman failed to identify the sibling species *H. gutturalis* in the region, where it has been collected frequently, one may question the correctness of the record.

Gaumer (*in* Boucard, 1883) reported the species common in Yucatán and occurring in flocks of six to a dozen. I have found the species usually solitary, in contrast to *H. gutturalis* which is gregarious, and definitely uncommon throughout the Peninsula. I suspect that the two species have often been confused.

Although both species occur in dense rain forest, *H. rubica* appears much more restricted to this type of habitat than *H. gutturalis*, which ranges into deciduous forest and at times into second growth of moderate height. My observations of *H. rubica* have not been extensive enough to be certain of this, however.

Peters (1913) reported that his two specimens from along the Río Hondo are not typical of the race. I have examined the birds in question and agree. The female is rather dark for *H. r. nelsoni*, but seems closer to that race than to *H. r. rubicoïdes*. The male is very dull and is unique among the specimens of both races which I have seen. The male in the present collection which was taken at Estero Franco is immature and is of no aid in determining the race of the birds along the river. For the present it is probably better to include these birds within *H. r. nelsoni*.

WEIGHT. Four adult males and an adult female weighed 27.7, 30.4, 31.5, 32.1, and 27.5 grams, respectively.

Tashian (1952) recorded the weights of an adult male and female of *H. r. rubicoïdes* as 41.0 and 36.0 grams, respectively. These few data suggest that a substantial difference in weight may exist between the two subspecies.

HABIA RUBICA RUBICOÏDES (Lafresnaye).

Saltator rubicoïdes Lafresnaye, Rev. Zool., 7:41, 1844. (Mexico.)

RANGE. The race is found from Veracruz and Oaxaca through Tabasco, southern Campeche, and Petén to British Honduras.

SPECIMENS. Campeche—20 km. N. Escárcega, 1♂, 1♀, Mar. 4, 1951.

HABITAT. Undergrowth of rain forest.

REMARKS. The female is in juvenal plumage and the male still retains a few traces of its immature plumage, consequently subspecific identification is uncertain. The male, however, is rather dark and probably should be called intermediate between the Peninsular race and *H. r. rubicoïdes*.

Traylor (1941) had a satisfactory series from Matamoros and Pacaytun and referred them to *H. r. rubicoïdes*.

WEIGHT. The male weighed 31.4 grams and the female 30.9 grams.

HABIA GUTTURALIS PENINSULARIS (Ridgway).
Red-throated Ant-Tanager.

Phoenicotheraupis salvini peninsularis Ridgway, Wash. Acad. Sci., Proc., 3:150, 1901. (Izalam, Yucatán.)

Habia gutturalis rooensis Griscom, Am. Mus. Novitates, No. 235:17, 1926. (Chun-yaxche, Quintana Roo.)

RANGE. The species is distributed from Mexico to Colombia; the race throughout the Peninsula, in Petén and, possibly, in northern British Honduras, except where occupied by the following: *H. g. littoralis* in southwestern Campeche and *H. g. insularis* on Isla Mujeres and the coast of northeastern Quintana Roo; *H. g. salvini*, which ranges from southern Veracruz to British Honduras, probably contiguous in Guatemala and British Honduras.

SPECIMENS. Quintana Roo—Chetumal, 1♂, 1♀, Nov. 4, 1♀, Nov. 9, 1♂, Nov. 17, 1♂, Nov. 19, 1♂, Nov. 22, 1♂, Nov. 26, 1♀, Nov. 30, 2♂, Dec. 10, 1♂, Dec. 24, 1948, 1♂, 2♀, Jan. 22, 1949, 2♂, Feb. 5, 2♂, Oct. 26, 1952; Bacalar, 1♀, Feb. 15, 1♂, 1♀, Feb. 16, 1952; 24 km. NW. Xtocomo, 1♂, Feb. 24, 1951; Laguna Chacabacab, 2♂, 1♀, May 18, 1949; Carrillo Puerto, 1♂, 1♀, May 19, 1♂, June 3, 1♀, June 6, 1♂, 1♀, June 20, 1950; 5 km. NW. Vigía Chico, 1♀, Apr. 9, 1949; Tabi, 2♂, 1♀, Mar. 15, 1♀, Mar. 18, 1949; Kantunil-Kin, 2♂, 2♀, Apr. 22, 1949. Yucatán—Xocempich, 1♂, Oct. 4, 1950; Sucopó, 1♂, Apr. 21, 1949. Campeche—Ichek, 1♂, Dec. 24, 1949.

HABITAT. Underbrush of both rain and deciduous forest, and in second growth of moderate height throughout.

REMARKS. In addition to the series in this collection I have had available for comparison four of the original series of *H. g. rooensis*, several specimens of *H. g. peninsularis* from Yucatán, a large series of *H. g. salvini* from throughout its range, and several specimens of *H. g. littoralis*.

Since *H. g. peninsularis* was described without direct comparison with *H. g. insularis*, it was necessary to determine whether they were synonyms before any attempt could be made to unravel the welter of races supposedly found on the Peninsula. Several specimens from the interior of the Peninsula were sent to the British Museum where Mr. J. D. Macdonald compared them with the type and original series of *H. g. insularis*. Mr. Macdonald reported (*in litt.*) that my specimens differ from the male of *H. g. insularis* in being more red dorsally and ventrally, and particularly so on the latter. The females of *H. g. insularis* are darker and richer, but in this sex the difference between the two forms is less pronounced. Therefore, it appears that *H. g. peninsularis* and *H. g. insularis* are two distinct races. This will be discussed below.

The male of *H. g. rooensis* was described as being closest to *H. g. salvini*, but differing in having the throat more crimson, the underparts less gray, the dorsum less red, and the crown patch less scarlet. The female was said to be much more distinct. It was described as differing from the female

of *H. g. salvini* in being lighter brown, in having a darker throat, and in having the occiput tinged with ochraceous tawny. I am in general agreement with these descriptions. The race definitely differs from *H. g. salvini*, but I find it is impossible to distinguish it from *H. g. peninsularis*.

H. g. peninsularis is a distinctive race, but its characters are somewhat variable. In the males the color of the throat and underparts is rather inconsistent and in females the throat and crown color has a wide range of variability. Nevertheless, it is always clearly distinguishable from *H. g. salvini*.

The complete range of *H. g. peninsularis* is not known. Van Tyne (1935) found it well into Petén and presumably it meets *H. g. salvini* at some point in the extreme southern part of that district. I have examined a few specimens from British Honduras and find them referable to *H. g. salvini*, although the two specimens in the original series of *H. g. rooensis* appear to be *H. g. peninsularis*. However, on the labels there is no definite locality within British Honduras; in fact they were recorded as "Honduras" and the word "British" was later added in pencil. These may have come from the northern part of British Honduras since *H. g. peninsularis* is to be expected to range into that region.

BREEDING. The two males taken at Laguna Chacanbacab on May 18 were in full reproductive condition, but one bird was in immature plumage.

WEIGHT. Nine mature males ranged from 32.9 to 41.6 grams, with a mean of 37.42 ± 0.86 . Five mature females weighed 30.8 to 37.7 grams, with a mean of 33.44 ± 1.17 .

HABIA GUTTURALIS INSULARIS (Salvin).

Phoenicothera insularis Salvin, Ibis, 6:259, 1888. (Meco, Quintana Roo.)

RANGE. Isla Mujeres and Meco, Quintana Roo.

REMARKS. Mr. J. D. Macdonald informed me (*in litt.*) that the type of this form, a male, is from Meco.

The race is known from one male and several females which came from Meco and Isla Mujeres. While Meco appears suitable for the species, Isla Mujeres does not. It is difficult to believe that it ever occurred there.

Although, on the basis of the data now available, both *H. g. peninsularis* and *H. g. insularis* must be accepted, it will not be unexpected if eventually it is found that the former is a synonym of the latter. When topotypical specimens are available from Meco, and from Mujeres, if the species exists there, I feel certain that it will be discovered that the type of *H. g. insularis* is slightly aberrant and that the females of *H. g. insularis* fit into the ordinary range of variation known from the remainder of the Peninsular population.

There are several reasons for reaching this conclusion. The most important is that the pattern of speciation found throughout the Peninsula is

almost consistently one which follows vegetation zones. There is no other case in which a race occurs in a small section of the coast and, if indeed it is true, on Isla Mujeres. While the mere fact that such a pattern has not been observed before is a weak argument, strength is lent to it when one tries to conceive of an isolating factor which would permit subspecies formation in this area. Neglecting the possibility of a population at one time on Isla Mujeres, I find it impossible to imagine any situation which would permit the formation of a race on the tiny peninsula of Meco. If the peninsula were at one time cut off from the mainland by water, it would still be within a very short flight from the mainland where the species is abundant, and not nearly so sedentary as many tropical species. Swamping would certainly occur with great regularity. Looking at the problem from another point, if it is held that Isla Mujeres once supported a population of this tanager and its distance from the mainland afforded enough isolation for the formation of the race, there is still the problem of how it could become established on Meco and not soon be swamped by the huge population occupying the entire Peninsula.

Only the collection of topotypic material from Meco will solve this problem.

HABIA GUTTURALIS LITTORALIS (Nelson).

Phoenicotheraupis littoralis Nelson, Auk, 18:48, 1901. (Frontera, Tabasco.)

RANGE. The race occupies the area from southern Tamaulipas along the coastal plain to Tabasco, Chiapas, and Campeche, and in the Caribbean lowlands of Guatemala; southeastern distribution poorly known.

SPECIMENS. Campeche—2 km. N. Aguada Seca, 1♂, Feb. 5, 2♂, 1♀, Feb. 6, 1951.

REMARKS. The female is considerably darker than *H. g. peninsularis* but not typical of any other race. The males are darker than *H. g. peninsularis* and have a slight purplish cast. They are obviously approaching *H. g. littoralis*. Traylor (1941) referred specimens from Matamoros and Pacaytun to this race also.

WEIGHT. The three males and the female weighed 36.1, 37.7, 39.4, and 30.5 grams, respectively.

LANIO AURANTIUS AURANTIUS Lafresnaye.
Black-throated Shrike-Tanager.

Lanio aurantius, Lafresnaye, Rev. Zool., 9:204, 1846. (Guatemala.)

RANGE. The species ranges from southern Mexico to Panama; the race from Veracruz and Oaxaca through southern Campeche and Quintana Roo to Guatemala and Honduras; the race often considered specifically distinct.

SPECIMENS. Quintana Roo—24 km. NW. Xtocomo, 1♂, 2♀, Feb. 25, 1951. Campeche—2 km. N. Aguada Seca, 2♀, Feb. 7, 1951.

HABITAT. Heavy rain forest.

REMARKS. This species has also been recorded at Pacaytun, Campeche (Traylor, 1941), and 30 miles north of Camp Mengel (= Alvaro Obregón), Quintana Roo (Peters, 1913). It is uncommon on the Peninsula.

WEIGHT. The male weighed 34.1 grams; the four females 30.7, 32.1, 33.7, and 34.3 grams.

EUCOMETIS PENICILLATA PALLIDA Berlepsch.
Gray-headed Tanager.

Eucometis spodocephala pallida Berlepsch, Auk, 5:451, 1888. (Yucatán.)

RANGE. The species ranges from southern Mexico to Paraguay; the race from Yucatán, Campeche, and Quintana Roo north to Veracruz and south to eastern Guatemala and Honduras.

SPECIMENS. Quintana Roo—Agua Blanca, 1♂, June 2, 1♂, 1♀, June 6, 1949; Km. 21, Chetumal-Bacalar Rd., 1♀, May 22, 1952; 24 km. NW. Xtocomo, 1♂, Feb. 23, 1951; Carrillo Puerto, 1♀, Mar. 21, 1949; Kantunil-Kín, 1♂, 1♀, Apr. 22, 1949. Yucatán—Xocempich, 1♀, May 1, 1949. Campeche—2 km. N. Aguada Seca, 1♀, Feb. 8, 1951.

HABITAT. Deciduous forest, and second growth and forest borders in the zone of rain forest.

REMARKS. Gray-headed Tanagers are surprisingly local everywhere on the Peninsula. They are usually found in the vicinity of swarming army ants.

BREEDING. The male collected on April 22 had enlarged testes and the birds taken in early June were also in breeding condition.

WEIGHT. Four males weighed 24.7, 26.2, 26.3, and 26.9 grams; four females 22.8, 23.2, 24.5, and 26.5 grams.

CHLOROPHANES SPIZA GUATEMALENSIS Slater.
Green Honeycreeper.

Chlorophanes spiza guatemalensis Slater, Zool. Soc. London, Proc., 29:129, 1861. (Choctum, Verapaz, Guatemala.)

RANGE. The species ranges from southern Mexico to Brazil; the race from Chiapas to Nicaragua; in Mexico recorded at two localities in north-eastern Chiapas and once at Pacaytun, Campeche (Traylor, 1941).

CYANERPES CYANEUS CARNEIPES (Sclater).
Red-legged Honeycreeper.

Coereba carneipes Sclater, Zool. Soc. London, Proc., 27:376, 1859. (Playa Vicente, Veracruz.)

RANGE. The species ranges from Mexico to Brazil and Peru, and in Cuba, where possibly introduced; the race from Veracruz to Panama, with the exception of the Pacific slope of Chiapas where little-known, and doubtfully valid, *C. c. striatipectus* is found; on the Peninsula in Campeche (sight record), Quintana Roo, and southern Yucatán (Cole, 1906).

SPECIMENS. Quintana Roo—Chetumal, 1♂, 1♀, Nov. 22, 2♀, Dec. 11, 1♀, Dec. 27, 1♀, Dec. 30, 1948; Estero Franco, 1♂, Jan. 26, 1949; Carrillo Puerto, 1♂, June 7, 1♂, June 27, 1950; Tabi, 1♂, Mar. 25, 1953; Kantunil-Kín, 2♂, Apr. 23, 1949; Xcan, 2♂, Apr. 26, 1♂, 1♀, Apr. 27, 1949, 1♂, May 30, 1951, 2♂, Apr. 10, 1952.

HABITAT. Rain forest and very rarely in high deciduous forest.

REMARKS. During the winter of 1948-49 there were a number of flocks of immature birds in the isolated dead trees standing in the *milpas* outside Chetumal. Ordinarily they are found in forests of high trees.

BREEDING. All the birds collected in April 1949 were breeding.

WEIGHT. Two mature males and an immature male weighed 12.3, 12.4, and 13.8 grams, respectively. Three females weighed 14.0, 14.2, and 15.0 grams.

Family FRINGILLIDAE

SALTATOR ATRICEPS ATRICEPS (Lesson).
Black-headed Saltator. Tsapin.

Tanagra (Saltator) atriceps Lesson, Cent. Zool., p. 208, 1832. (Veracruz.)

RANGE. The species occurs from Mexico to Panama; the race from Tamaulipas to Costa Rica, with the exception of most of the Yucatán Peninsula, Guerrero, southern Veracruz, and the Pacific slope of Chiapas, which are occupied by local races; on the Peninsula in southwestern Campeche.

SPECIMENS. Campeche—2 km. N. Aguada Seca, 2♂, Feb. 5, 1♀, Feb. 10, 1951.

HABITAT. Second growth and forest edge.

REMARKS. Traylor (1941) referred six specimens from Matamoros and Pacaytun to this race. Two of my specimens are fairly typical of the nominate form, but the third is closer to *S. a. raptor*.

BREEDING. All three specimens exhibited the earliest indications of reproductive activity.

WEIGHT. The two males and the female weighed 79.9, 83.1, and 87.3

grams, respectively. For the record, two late summer females from the vicinity of Tuxtla-Gutiérrez, Chiapas, weighed 86.5 and 89.0 grams.

SALTATOR ATRICEPS RAPTOR (Cabot).

Pyrrhula raptor Cabot, Boston Soc. Nat. Hist., Jour., 5:90, 1845. (Yucatán.)

RANGE. The race recorded in Yucatán and Quintana Roo, and undoubtedly will be found in northern Campeche; *S. a. atriceps* contiguous in southwestern Campeche, Petén, and British Honduras.

SPECIMENS. Quintana Roo—Chetumal, 1♀, Dec. 3, 1♂, 1♀, Dec. 9, 1♂, Dec. 10, 1♂, Dec. 23, 1948, 1♂, Feb. 25, 1♂, Mar. 24, 1949, 1♀, May 26, 1950; Bacalar, 1♂, Feb. 7, 1952; Agua Blanca, 1♀, June 6, 1949; Carrillo Puerto, 1♂, Apr. 4, 1949; 5 km. W. Vigía Chico, 1♂, Apr. 8, 1949; Tabi, 1♂, 1♀, Mar. 15, 1949, 1♂, Mar. 28, 1953; Xcan, 1♀, Apr. 27, 1949. Yucatán—Xocempich, 1♀, Nov. 25, 1949, 1♂, Oct. 3, 1950; Sucopó, 1♂, Apr. 21, 1949; Dzidzantún, 1♀, Feb. 1, 1952.

HABITAT. Second growth, particularly abandoned *milpas*, borders of forest, and light deciduous forest.

REMARKS. This race differs from the nominate form in being more pale below and in having its flanks nearly concolor with the back, rather than olivaceous. The color of the breast and abdomen varies and at times it is not different from that of *S. a. atriceps*. Nevertheless, although not a markedly distinct race, it is worthy of subspecific designation.

The specimens from Yucatán and northern Quintana Roo are readily separable, but some of those from the southern part of Quintana Roo exhibit a strong approach toward *S. a. atriceps*. The majority, however, are clearly close to the Peninsular race.

BREEDING. Specimens with slightly enlarged gonads were taken in late February and in March. Birds which were apparently breeding were collected on April 8 and 21.

WEIGHT. Nine males ranged from 71.2 to 91.2 grams, with a mean of 80.45 ± 2.13 ; five females from 68.2 to 82.0 grams, with a mean of 76.16 ± 2.51 .

SALTATOR MAXIMUS MAGNOIDES Lafresnaye.
Buff-throated Saltator.

Saltator magnoides Lafresnaye, Rev. Zool., 7:41, 1844. (Guatemala.)

RANGE. The species is distributed from Mexico to Paraguay; the race from Chiapas to Panama; on the Peninsula in southern Campeche (Hellmayr, 1938) and Quintana Roo; *S. m. gigantodes* ranges from Tabasco to Oaxaca and Veracruz.

SPECIMEN. Quintana Roo—Carrillo Puerto, 1♂, June 3, 1950.

HABITAT. Rain forest.

REMARKS. This form, a sibling species of *S. atriceps*, is very rare on the Peninsula. The specimen, which is from the Legters collection, is the third record for the region. Hellmayr (1938) recorded the species from Campeche, and Peters (1913) from Xcopen, Quintana Roo.

SALTATOR COERULESCENS YUCATANENSIS Berlepsch.
Grayish Saltator.

Saltator grandis yucatanensis Berlepsch, Verh. 5th Internat. Ornith. Kongr. Berlin, p. 1114, 1912. (Mérida, Yucatán.)

RANGE. The species occurs from Mexico to Argentina; the race in Yucatán, Quintana Roo, Campeche (Traylor, 1941), and extreme eastern Tabasco; *S. c. grandis*, which ranges from Tamaulipas through eastern Mexico to Costa Rica, contiguous in Tabasco, Petén, and southernmost Quintana Roo.

SPECIMENS. Quintana Roo—Tabi, 1♀, Mar. 11, 1♂, Mar. 12, 1♀, Mar. 15, 1♂, Mar. 17, 1949; Xcan, 1♂, Apr. 25, 1♂, Apr. 26, 1949. Yucatán—Sucopó, 1♀, Apr. 21, 1949; Kímbilá, 1♂, Mar. 24, 1951.

HABITAT. Primarily in second growth in the zone of deciduous forest; uncommon in rain forest.

REMARKS. I have examined the specimens which Traylor (1941) collected in southern Campeche. Surprisingly, they exhibit only the slightest approach toward *S. c. grandis*.

BREEDING. The only record is that of a male with enlarged gonads on April 26.

WEIGHT. Three males weighed 52.6, 61.8, and 63.4 grams.

SALTATOR COERULESCENS GRANDIS (W. Deppe).

Tanagra grandis W. Deppe, Preis.-Verz. Säug., Vögel, etc., Mexico, p. 2, 1830. (Jalapa, Veracruz.)

RANGE. The race from Tamaulipas through eastern Mexico to Costa Rica; one record from extreme southern Quintana Roo (Peters, 1913).

REMARKS. I have examined the bird collected by Peters (1913) at Xcopen and find it a good example of this race.

CARYOTHAUSTES POLIOGASTER POLIOGASTER (Du Bus).
Black-faced Grosbeak.

Pitylus polioaster Du Bus, Acad. Roy. Sci. Belgique, Bull., 14:105, 1847. (Guatemala.)

RANGE. The species ranges from southern Mexico to Panama; the race from Veracruz and Oaxaca to Honduras, including southern Campeche (Traylor, 1941) and Quintana Roo.

SPECIMENS. Quintana Roo—46 km. W. Chetumal, 1♂, Feb. 14, 1♂, Feb. 16, 1949, 1♂, Aug. —, 1950.

HABITAT. Heavy rain forest.

REMARKS. This grosbeak is rather rare, even in the heaviest rain forest at the base of the Peninsula.

WEIGHT. Two males weighed 40.7 and 43.3 grams.

RICHMONDENA CARDINALIS YUCATANICA (Ridgway).
Cardinal. Cardenal. Chak-ts'its'ib.

Cardinalis cardinalis yucatanicus Ridgway, Man. No. Am. Bds., p. 443, 1887. (Mérida, Yucatán.)

RANGE. The species is distributed over most of the eastern half of the United States and through Mexico to northern British Honduras; the race in Yucatán, in Campeche (Traylor, 1941), and on Isla Holbox, Quintana Roo; probably on the mainland of northernmost Quintana Roo, and possibly once on Isla Mujeres (Salvin, 1888); *P. c. saturata* on Isla Cozumel; *R. c. flammigera* at least from central Quintana Roo south to northern British Honduras; *R. c. littoralis* probably contiguous in eastern Tabasco.

SPECIMENS. Yucatán—Mérida, 1♂, 1♀, Oct. 19, 1950; 10 km. N. Mérida, 1♂, Sept. 6, 1950; Sisal, 2♂, 1♀, Jan. 6, 2♂, Jan. 7, 1♀, Jan. 8, 1♂, 1♀, Jan. 9, 1951; Temax, 1♂, Nov. 28, 1951; Uxmal, 1♀, Jan. 17, 1951; Dzidzantún, 1♀, Oct. 22, 1♂, Nov. 28, 1951; Santa Clara, 1♂, Aug. 25, 1♀, Aug. 29, 1950; Xocempich, 1♂, Nov. 12, 1952. Quintana Roo—Isla Holbox, 1♂, Dec. 17, 1♂, Dec. 19, 1950.

HABITAT. Most numerous in coastal scrub; elsewhere fairly common in abandoned *milpas* and in forest edges.

REMARKS. This scarlet-colored race is ubiquitous in the sisal and cactus zone on the barrier bar of northern Yucatán.

Gaumer (*in* Salvin, 1888) recorded the species from Isla Mujeres but I saw none in 1950 and no one on the island knew of its presence at any time.

Traylor (1941) found this subspecies at Matamoros and Pacaytun. Since one of the races characteristic of wetter forest would have been more

expected, at my request, Mr. E. R. Blake kindly re-examined the specimens and confirmed Traylor's identification.

WEIGHT. Six males had a mean weight of 36.88 ± 0.45 , with a range from 34.5 to 38.3 grams. Four females weighed 33.0, 33.3, 33.9, and 34.4 grams.

RICHMONDENA CARDINALIS FLAMMIGERA (Peters).

Cardinalis cardinalis flammiger Peters, Auk, 30:380, 1913. (Xcopen, Quintana Roo.)

RANGE. The race known from central and southern Quintana Roo and northern British Honduras (Griscom, 1926a).

SPECIMENS. Quintana Roo—Chetumal, 1♂, Nov. 7, 1♂, Nov. 10, 1♀, Nov. 16, 1♂, Nov. 23, 1♂, Dec. 18, 1♂, Dec. 23, 1948, 1♀, Oct. 29, 1952; Ucum, 1♂, Feb. 25, 1952; Laguna Chacanbacab, 1♂, Feb. 15, 1951; Agua Blanca, 1♂, June 4, 1949; 5 km. N. Vigía Chico, 1♂, Apr. 8, 1949; Carrillo Puerto, 1♂, 1♀, Apr. 18, 1♂, June 12, 1950; Tabi, 3♂, Mar. 9, 1♀, Mar. 10, 1949.

HABITAT. Second growth and very rarely in forest edges.

REMARKS. PETERS (1913) described the male of this race as being closest to that of *R. c. yucatanica*, but differing in that it is slightly larger, has a longer, more slender bill, and is slightly more darkly colored. The female was said to resemble the female of *R. c. yucatanica*, except that it is slightly darker on the back.

I have examined the type of *R. c. flammigera*, the two topotypes in the type series, and the specimens in the present collection, as well as a large series of *R. c. yucatanica*. The only difference between the races which is evident is the slightly darker, more vermilion color of the male *R. c. flammigera*.

The bill of the type of *R. c. flammigera* is admittedly more slender than most Peninsular cardinals, but this can be matched by specimens from northernmost Yucatán, while some richly colored specimens from Chetumal have bills which rival the heaviest from Yucatán.

There is a complete overlap of all linear measurements.

Because the difference between the subspecies is slight, but clearly evident, it is difficult to determine from the material at hand where the division between the forms should be drawn. A slight majority of the specimens from Carrillo Puerto and Tabi are rather dark and assignable to *R. c. flammigera*, while the remainder can be placed in *R. c. yucatanica*.

BREEDING. The only known breeding record from anywhere on the Peninsula is that of a male collected at Agua Blanca on June 4 with enlarged testes.

WEIGHT. Ten males had a mean weight of 37.13 ± 0.49 , with a range from 34.6 to 39.9 grams. Two females weighed 36.0 and 36.1 grams.

RICHMONDENA CARDINALIS SATURATA (Ridgway).

Cardinalis saturatus Ridgway, Biol. Soc. Wash., Proc., 3:24, 1885. (Isla Cozumel, Yucatán [= Quintana Roo].)

RANGE. Endemic to Isla Cozumel.

SPECIMENS. Quintana Roo—Isla Cozumel, 1♀, Jan. 4, 3♂, 1♀, Jan. 9, 1♂, Jan. 11, 1♀, Jan. 15, 1949, 1♀, Feb. 3, 1951, 1♀, June 6, 1952.

HABITAT. Second growth.

REMARKS. The slightly larger linear measurements, the heavier bill and feet, and the darker color clearly distinguish this race from the mainland forms.

WEIGHT. The data are limited but seem to indicate that the males are heavier than those from the mainland. Four males weighed 37.0, 40.7, 41.2, and 42.8 grams; three females 34.7, 35.3, and 35.9 grams.

PHEUCTICUS LUDOVICIANUS (Linnaeus).
Rose-breasted Grosbeak.

Loxia ludoviciana Linnaeus, Syst. Nat., ed. 12, 1:306, 1766. (Louisiana.)

RANGE. A monotypic form which breeds in Canada and the eastern half of the United States; winters from southern Mexico to Ecuador; recorded from Campeche (Traylor, 1941), Yucatán, and Quintana Roo, including Islas Holbox and Cozumel (Salvin, 1888).

SPECIMENS. Quintana Roo—Chetumal, 1♂, Nov. 17, 1♂, Nov. 22, 1♂, Nov. 23, 1♀, Nov. 28, 1949. Yucatán—Xocempich, 1♂, Jan. 3, 1950; Dzidzantún, 1♂, Oct. 29, 1♂, Nov. 28, 1951; Temax, 1♂, Oct. 22, 1951.

HABITAT. Light forest and high second growth throughout.

WEIGHT. Two males weighed 41.1 and 46.3 grams, and two females 37.8 and 43.6 grams.

GUIRACA CAERULEA CAERULEA (Linnaeus).
Blue Grosbeak.

Loxia caerulea Linnaeus, Syst. Nat., ed. 10, 1:175, 1758. (South Carolina.)

RANGE. The species breeds in most of the eastern United States and the southern part of the western United States southward to Costa Rica; the race in the eastern half of the United States; winters from eastern Mexico, through Campeche (Traylor, 1941, sight record), Yucatán, and Quintana Roo, including Isla Cozumel, to Panama.

SPECIMENS. Quintana Roo—Chetumal, 1♀, Nov. 7, 1948; Isla Cozumel, 2♀, Jan. 17, 1949. Yucatán—Mérida, 1♀, Oct. 7, 1950; Xocempich, 1♂, Jan. 3, 1♂, Jan. 7, 1950; Santa Clara, 1♂, Dec. 4, 1951, 1♂, Jan. 24, 1952; Uxmal, 1♂, 1♀, Jan. 19, 1951.

HABITAT. Chiefly high second growth.

REMARKS. Blue Grosbeaks are common in the northern part of the Peninsula but more rare in the southern section.

An indication of the northward migration was noted on April 13, 1949, when a flock of 30 or 40 grosbeaks was observed feeding on weeds in the center of Chetumal.

WEIGHT. A male weighed 29.7 grams and four females 25.7, 26.7, 26.8, and 29.2 grams.

CYANOCOMPSA PARELLINA PARELLINA (Bonaparte).

Blue Bunting.

Cyanoloxia parellina Bonaparte, Consp. Gen. Av., 1:502, 1850. (Alvarado, Veracruz.)

RANGE. The species occurs from Mexico to Nicaragua; the race from Veracruz through eastern Mexico to Campeche (Traylor, 1941), Yucatán, and Quintana Roo, including Isla Mujeres (Salvin, 1888) where probably accidental; *C. p. dearborni* contiguous in Petén and probably British Honduras; several additional races in western and northern Mexico.

SPECIMENS. Quintana Roo—Chetumal, 1♀, Nov. 16, 1♂, Nov. 18, 1♀, Dec. 3, 1♂, Dec. 9, 1♀, Dec. 11, 1948; Bacalar, 1♀, Feb. 9, 1♀, Feb. 13, 1952; 25 km. W. Chetumal, 1♂, Aug. 20, 1950; Ucum, 1♂, Feb. 26, 1952; 46 km. W. Chetumal, 1♂, Feb. 11, 1♂, Feb. 15, 1949; Laguna Chacabacab, 1♀, May 17, 1949; Carrillo Puerto, 1♀, Apr. 11, 1949, 1♂, June 5, 1♀, June 23, 1950; Tulum, 1♀, Jan. 13, 1949; Xcan, 1♂, Apr. 28, 1949. Yucatán—Xocempich, 1♂, Jan. 3, 1♀, Sept. 29, 1♀, Oct. 4, 1♀, Dec. 28, 1950; Uxmal, 1♂, Jan. 19, 1951.

HABITAT. Underbrush in both rain and deciduous forest zones.

REMARKS. A common roadside bird.

BREEDING. The male taken at Xcan on April 28 had enlarged testes. This is the only breeding record available from the region.

WEIGHT. Six males ranged from 13.9 to 16.8 grams, with a mean of 15.48 ± 0.36 ; five females from 13.4 to 15.2 grams, with a mean of 14.42 ± 0.29 .

CYANOCOMPSA CYANOIDES CONCRETA (Du Bus).

Blue-black Grosbeak.

Cyanoloxia concreta Du Bus, Acad. Roy. Sci. Belgique, Bull., 22:150, 1855. (Playa Vicente, Veracruz.)

RANGE. The species ranges from Mexico to Amazonia; the race in Veracruz, Chiapas, Tabasco, Guatemala, and British Honduras, and in southern

Campeche (Traylor, 1941) and Quintana Roo; *C. c. caerulescens* from Honduras to Panama.

SPECIMENS. Quintana Roo—Km. 25, Chetumal-Bacalar Rd., 1♂, May 25, 1952; Bacalar, 1♂, Feb. 10, 1952; 46 km. W. Chetumal, 1♂, Feb. 13, 1♂, Feb. 16, 1949; 15 km. NW. Xtocomo, 1♂, Feb. 26, 1951; Laguna Chacanbacab, 1♀, May 12, 1949; Agua Blanca, 2♂, June 1, 2♂, June 2, 1♂, June 3, 1949.

HABITAT. Undergrowth of high rain forest.

REMARKS. A fairly common, but secretive, species in the wettest forest.

BREEDING. All the June specimens, and one collected on Feb. 13, exhibited enlarged gonads. One of the males taken on June 1 is in immature plumage with a few scattered black feathers, yet it had moderately enlarged testes.

WEIGHT. Six mature males ranged from 25.8 to 30.4 grams, with a mean of 28.06 ± 0.56 . Two immature males weighed 30.1 and 30.7 grams; a female 26.6 grams.

PASSERINA CYANEA (Linnaeus).

Indigo Bunting. Azulejo.

Tanagra cyanea Linnaeus, Syst. Nat., ed. 12, 1:315, 1766. (South Carolina.)

RANGE. A monotypic species which breeds in eastern North America and winters from Mexico to Panama; on the Peninsula in Yucatán, Campeche, and Quintana Roo, including Isla Cozumel (Salvin, 1888).

SPECIMENS. Quintana Roo—Chetumal, 1♀, Nov. 5, 1♂, Dec. 6, 1♀, Dec. 9, 1♀, Dec. 18, 1♀, Dec. 22, 1♀, Dec. 31, 1948, 1♀, Feb. 8, 1949; 23 km. W. Chetumal, 1♀, Nov. 11, 1948; Bacalar, 1♂, Feb. 10, 1952; Tabi, 1♂, Apr. 12, 1953. Yucatán—Yobain, 1♂, Jan. 14, 1♂, Jan. 16, 1♀, Jan. 17, 1♂, Jan. 19, 1950; San Diego, 2♂, Mar. 18, 1950. Campeche—Ichek, 1♀, Apr. 21, 1952; Champotón, 1♀, Jan. 21, 1951.

HABITAT. Grass and low thickets.

REMARKS. Indigo Buntings are found, almost exclusively, near sizable settlements since suitable habitats are common only in these regions.

WEIGHT. A male weighed 14.5 grams; two females 14.2 and 14.6 grams.

PASSERINA CIRIS CIRIS (Linnaeus).

Painted Bunting. Mariposa.

Emberiza ciris Linnaeus, Syst. Nat., ed. 10, 1:179, 1758. (South Carolina.)

RANGE. The species breeds in the United States from New Mexico, Arkansas, and North Carolina southward; the race in the eastern part of the range; winters in Yucatán, Campeche, and Quintana Roo, including Islas Holbox (Salvin, 1888), Mujeres (Salvin, 1888), and Cozumel, and in the West Indies.

SPECIMENS. Quintana Roo—Chetumal, 1♂, Nov. 2, 1♂, Nov. 24, 1♀, Dec. 7, 1948; Tabi, 1♂, Mar. 28, 1953; Xcan, 1♂, Apr. 10, 1952; Isla Cozumel, 1♂, Jan. 9, 1♀, Jan. 11, 1♀, Jan. 15, 1949. Yucatán—Xocempich, 2♂, Jan. 5, 1♂, Feb. 15, 1950; Yobaín, 1♀, Jan. 16, 1950; Santa Clara, 1♂, Mar. 25, 1♂, Dec. 4, 1950. Campeche—Ichek, 1♀, Apr. 22, 1952.

HABITAT. Newly abandoned fields and other areas with low vegetation.

REMARKS. A common visitant.

WEIGHT. Three adult males weighed 15.5, 16.2, and 17.8 grams; two adult females 15.6 and 16.3 grams.

TIARIS OLIVACEA PUSILLA Swainson.

Yellow-faced Grassquit.

Tiaris pusillus Swainson, Philos. Mag., 1:438, 1827. (Temascáltepec and Real del Monte, Mexico.)

RANGE. The species ranges from eastern Mexico to Colombia and Venezuela, and in the Greater Antilles; the race from Tamaulipas southward over the entire mainland range including Yucatán, Campeche, and Quintana Roo, including Isla Holbox; *T. o. intermedia* on Isla Cozumel.

SPECIMENS. Quintana Roo—Carrillo Puerto, 1♂, May 23, 1♀, June 8, 1♀, June 14, 1♂, June 22, 1950; Tabi, 1♂, 1♀, Mar. 12, 1949, 1♀, Mar. 30, 1953; Xcan, 1♂, 1♀, Apr. 28, 1949; Isla Holbox, 3♂, 1♀, Dec. 18, 1♂, Dec. 19, 2♀, Dec. 20, 1950. Yucatán—Mérida, 1♂, Oct. 7, 1♂, Oct. 9, 1♂, Oct. 19, 1950; Mérida-Progreso Rd., 1♂, 1♀, Sept. 7, 1950; Yobaín, 1♂, Jan. 16, 1950; Dzidzantún, 1♀, June 14, 1952. Campeche—Ichek, 1♀, May 24, 1952.

HABITAT. Clearings with low scattered bushes; particularly abundant at roadsides.

REMARKS. Yellow-faced Grassquits are very local. The northern part of the Peninsula, with its large human population, is particularly suited to the needs of this bird since the vegetation is kept low in the vicinity of towns. It is extremely rare in the southern half of the region. If the population continues to grow, and southern Quintana Roo and Campeche are more thickly settled, the species may be expected to become more common.

There are only two adult males in the collection from Isla Holbox, but they are more extensively black on the breast than specimens from Isla Cozumel, and are definitely referable to *T. o. pusilla*. Salvin (1888), however, considered Holbox within the range of *T. o. intermedia*.

BREEDING. A male with enlarged testes on March 12 and a female which contained a well developed egg on June 14 are the only records.

WEIGHT. Three mature males weighed 9.4, 10.0, and 10.1 grams; two immature males 9.0 and 9.2 grams; four females 8.5, 8.7, 8.9, and 10.2 grams.

TIARIS OLIVACEA INTERMEDIA (Ridgway).

Euetheia olivacea intermedia Ridgway, Biol. Soc. Wash., Proc., 3:22, 1885. (Isla Cozumel, Quintana Roo.)

RANGE. Endemic to Isla Cozumel.

SPECIMENS. Quintana Roo—Isla Cozumel, 1♂, 2♀, Jan. 3, 1♂, Jan. 6, 2♂, 1♀, Jan. 9, 1949, 1♂, May 31, 1950, 1♀, June 5, 1♂, June 6, 1952.

HABITAT. Low vegetation and at edges of clearings.

REMARKS. This race, as the name implies, bridges a gap between the nominate form, which has the black of the throat very restricted, and *T. o. pusilla*, in which the black extends to the abdomen.

I am able to discern no difference in size between this and the mainland form.

It is very abundant along the trails on the outskirts of San Miguel.

WEIGHT. Four mature males weighed 8.7, 8.8, 9.4, and 9.5 grams.

SPIZA AMERICANA (Gmelin).
Dickcissel.

Emberiza americana Gmelin, Syst. Nat., 1:872, 1789. (New York.)

RANGE. A monotypic form which breeds from Wyoming, Ontario, and Michigan south to Texas and Georgia; winters in Central and South America; on the Peninsula recorded only as a spring transient in Quintana Roo, including Isla Cozumel (Salvin, 1888).

SPECIMEN. Quintana Roo—Laguna Chacanbacab, 1♂, May 15, 1949.

HABITAT. This specimen was collected in a very small clearing at the side of a trail in the rain forest.

REMARKS. The bird was in perfect physical condition with nothing to indicate why it was present so late in the spring.

WEIGHT. It weighed 24.5 grams.

SPOROPHILA TORQUEOLA MORELLETI (Bonaparte).
White-collared Seedeater.

Spermophila morelleti Bonaparte, Conspec. Gen. Av., 1:497, 1850. (Petén, Guatemala.)

RANGE. The species occurs from Mexico to Honduras; the race from Tamaulipas through eastern Mexico to Honduras; on the Peninsula in Yucatán, Campeche (Traylor, 1941), and Quintana Roo, including Isla Mujeres (Salvin, 1888).

SPECIMENS. Quintana Roo—Chetumal, 1♂, 1♀, Nov. 19, 1♂, Nov. 23, 1♀, Dec. 18, 1♀, Dec. 21, 2♂, Dec. 22, 1948, 1♀, Oct. 26, 1952; 7 km. W. Chetumal, 1♀, Nov. 7, 1948; Laguna Chacanbacab, 1♂, May 14, 1♀, May 17, 1♀, May 19, 1♂, May 20, 1949; Estero Franco, 1♂, Jan. 26, 1949. Yucatán—Xocempich, 1♀, Oct. 10, 1952; Santa Clara, 1♂, Sept. 2, 1949, 1♀, Mar. 26, 1♂, Sept. 14, 1950.

HABITAT. Weeds or low thickets throughout.

REMARKS. A very common species near cultivated regions; local elsewhere. I did not observe it on Isla Mujeres and presume it to be rare or possibly extirpated.

BREEDING. All the May specimens were breeding. The male taken at Santa Clara on September 2, 1949, had enlarged testes.

WEIGHT. Two breeding males weighed 7.8 and 8.4 grams; a subadult male 8.1 grams; two breeding females 7.5 and 7.7 grams.

VOLATINIA JACARINA SPLENDENS (Vieillot).
Blue-black Grassquit.

Fringilla splendens Vieillot, Nouv. Dict. Hist. Nat., 12:173, 1817. (Cayenne.)

RANGE. The species is distributed from Mexico to northern Argentina; the race from Tamaulipas and Sinaloa to Amazonia and the Lesser Antilles; throughout the mainland of the Peninsula.

SPECIMENS. Quintana Roo—Chetumal, 1♂, Dec. 7, 1♀, Dec. 22, 1♂, 1♀, Dec. 27, 1948, 1♂, 1♀, Jan. 22, 1♂, Feb. 8, 1♂, June 1, 1949; Bacalar, 1♂, Feb. 12, 1952; Carrillo Puerto, 1♂, June 13, 1950. Yucatán—Mérida, 2♂, Oct. 10, 1♂, Oct. 11, 1950; Mérida-Progreso Rd., 1♂, Sept. 8, 1950; Dzidzantún, 2♂, July 31, 1952. Campeche—Pueblo Nuevo, 1♂, July 19, 2♂, Sept. 22, 1950; Ichek, 1♂, July 22, 1950.

HABITAT. Weedy growth throughout.

REMARKS. Ubiquitous in the vicinity of large towns.

BREEDING. A male with slightly enlarged testes on June 1 is the only recorded indication of breeding.

WEIGHT. The weights of four males and a female were 8.6, 8.9, 9.0, 9.1, and 9.0 grams, respectively.

SPINUS PSALTRIA JOUYI (Ridgway).
Dark-backed Goldfinch.

Astragalinus mexicanus jouyi Ridgway, Auk, 15:320, 1898. (Temax, Yucatán.)

RANGE. The species ranges from Oregon, Colorado, and Texas south to Peru and Venezuela; the race endemic to Yucatán and Quintana Roo, including Isla Mujeres (Salvin, 1888); the nominate form from Colorado and Texas to Oaxaca; *S. p. colombianus* from Chiapas to the southern limits of the species.

SPECIMENS. Quintana Roo—Carrillo Puerto, 1♂, 1♀, June 21, 1♀, June 22, 1950; Ch'ich', 1♂, May 13, 1950; Tabi, 1♀, Mar. 23, 1953. Yucatán—Xocempich, 1♀, Nov. 8, 1949, 1♂, July 23, 1♂, Oct. 9, 1952.

HABITAT. Abandoned *milpas* and other weedy growth.

REMARKS. It appears that this is an extremely local race. The entire series listed above is from the Legters collection. I have never seen the race in the field, although it is a fairly common cage-bird in the market at Mérida, and presumably must occur in substantial numbers in the vicinity of the city.

ARREMONOPS RUFIVIRGATUS VERTICALIS (Ridgway).
Olive Sparrow. Xpokin.

Embernagra rufivirgata verticalis Ridgway, U. S. Nat'l Mus., Proc., 1:248-249, 1878. (Mérida, Yucatán.)

RANGE. The species occurs from southeastern Texas to Nicaragua; the race endemic to Yucatán, Campeche, and Quintana Roo; *A. r. crassirostris* in Veracruz, Puebla, and Oaxaca.

SPECIMENS. Quintana Roo—Chetumal, 1♂, Nov. 23, 1♂, Dec. 9, 1948, 1♂, Feb. 9, 1949, 1♀, May 26, 1950, 1♀, Oct. 29, 1952; Carrillo Puerto, 1♂, Apr. 29, 1♂, June 5, 1♂, June 15, 1950; Tabi, 2♀, Mar. 12, 1949; Ch'ich', 1♀, May 12, 1950; Kantunil-Kin, 1♂, Apr. 23, 1949. Yucatán—Xocempich, 1♂, May 11, 1949, 1♀, Jan. 5, 1♂, 1♀, Sept. 30, 1950, 1♂, Oct. 6, 1951, 1♂, June 20, 1952; Mérida, 1♂, Oct. 6, 1♀, Oct. 10, 1♂, Oct. 20, 1950; Temax, 1♂, Nov. 28, 1951; Dzidzantún, 1♂, Dec. 30, 1951, 1♀, June 14, 1952. Campeche—Ichek, 1♀, Dec. 22, 1949, 1♂, Sept. 25, 1950, 1♂, May 23, 1952.

HABITAT. Thick undergrowth in the zone of deciduous forest and in dense second growth in the zone of rain forest; never in heavy forest.

REMARKS. This is a very distinctive race, apparently isolated from other populations by a barrier of high, wet forest. It occurs in the rain forest zone only in areas where the forest has been destroyed and replaced by second growth.

Although *A. r. verticalis* and the sibling species *A. conirostris chloronotus* have been recorded at times in the same general region, they have different habitat preferences which effectively isolate them. This is particularly noticeable in the vicinity of Chetumal where *A. r. verticalis* occurs abundantly in the sunny tangles of abandoned fields, while *A. c. chloronotus* occurs with equal abundance in the dark underbrush of high forest.

BREEDING. The specimen collected at Dzidzantún on June 14 contained a nearly fully developed egg.

WEIGHT. Two males weighed 26.3 and 29.5 grams; three unsexed birds 18.8, 23.3, and 23.5 grams. The extremely light specimen is in heavy molt.

ARREMONOPS CONIROSTRIS CHLORONOTUS (Salvin).
Green-backed Sparrow. Xpokin.

Embernagra chloronota Salvin, Zool. Soc. London, Proc., 29:202, 1861. (Choc-tum, Guatemala.)

RANGE. The species ranges from southern Mexico to Ecuador and Venezuela; the race from Tabasco and Chiapas, through Yucatán (Traylor, 1941), Campeche, and Quintana Roo, to Guatemala and Honduras.

SPECIMENS. Quintana Roo—Chetumal, 1 ♂, Nov. 10, 1 ♀, Nov. 16, 1 ♀, Dec. 16, 1948; Bacalar, 1 ♂, Feb. 12, 1 ♂, Feb. 17, 1 ♀, Oct. 27, 1 ♂, Oct. 28, 1952; Estro Franco, 1 ♀, Jan. 26, 1949; Carrillo Puerto, 1 ♂, June 14, 1 ♀, June 20, 1950; Tabi, 1 ♀, Mar. 23, 1 ♂, Mar. 30, 1953; Xcan, 1 ♀, Apr. 27, 1949. Campeche—2 km. N. Aguada Seca, 1 ♀, Feb. 5, 1951.

HABITAT. Underbrush of rain forest and occasionally in that of high deciduous forest.

REMARKS. Traylor's observation (1941) that this species was more common at Chichén Itzá than *A. r. verticalis* is surprising, especially in view of the fact that it had not been recorded from there previously, although *A. r. verticalis* had been found to be abundant (Chapman, 1896; Cole, 1906). In my experience this is an uncommon bird in deciduous forest and I should expect it to be uncommon at Chichén Itzá. In the field it is exceedingly difficult to distinguish the two species through morphological differences alone, and it is possible that Traylor's field observations were faulty.

WEIGHT. A male and a female weighed 25.7 and 23.7 grams respectively; three unsexed birds 25.2, 27.3, and 27.6 grams.

PASSERCULUS SANDWICHENSIS SAVANNA (Wilson).
Savannah Sparrow.

Fringilla savanna Wilson, Am. Ornith. 3:55, 1811. (Savannah, Georgia.)

RANGE. The species occurs from Labrador and Alaska southward through Canada and the United States, and in the highlands from Mexico to Guatemala; the race breeds from Quebec south to New Jersey and Illinois; winters from the southeastern United States to eastern Mexico, the Bahamas, and Cuba; Peninsular records from Quintana Roo, including Islas Holbox (Salvin, 1888), Cozumel (Salvin, 1888), and Mujeres, and from Yucatán.

SPECIMENS. Quintana Roo—Laguna Chichancanab, 1 ♂, Mar. 11, 1951; Isla Mujeres, 1 ♀, Dec. 22, 1 ♂, 1 ♀, Dec. 24, 1950. Yucatán—Xocempich, 1 ♂, Nov. 13, 1952.

HABITAT. Chiefly coastal grasslands but occasionally inland.

REMARKS. Griscom (1926a) recorded *P. s. alaudinus* (= *anthinus*) from

the coast of Quintana Roo. However, later when the species was monographed (Peters and Griscom, 1938) Quintana Roo was not included within the range of *P. s. anthinus*. It is presumed that Griscom's earlier identification was erroneous.

The species is found with some regularity along the coast, but seems to be very rare inland.

WEIGHT. Two males weighed 16.5 and 18.2 grams, and two females 14.4 and 15.6 grams.

AMMODRAMUS SAVANNARUM PRATENSIS (Vieillot).
Grasshopper Sparrow.

Passerina pratensis Vieillot, Nouv. Dict. Hist. Nat., 25:24, 1817. (New York.)

RANGE. The species breeds from British Columbia and Ontario southward to southern Texas, from the state of Mexico locally to Colombia, Ecuador, and islands off the coast of Venezuela, and in the Greater Antilles; the race in Ontario and in the eastern United States west to Wisconsin and south to Louisiana and Georgia; winters from the southern half of the breeding range to Guatemala and Cuba; Peninsular records from Islas Cozumel, Holbox, and Mujeres, and Cayo Culebra; *A. s. cracens* resident in British Honduras and Petén, Guatemala.

SPECIMENS. Quintana Roo—Cayo Culebra, 1♀, Apr. 6, 1949; Isla Cozumel, 1♂, Jan. 12, 1949; Isla Mujeres, 1♂, Dec. 23, 1950; Isla Holbox, 1♀, Dec. 20, 1950.

HABITAT. High grass and scrubby bushes near the sea.

REMARKS. The species has been recorded several times in the past from Isla Cozumel (Ridgway, 1885; Salvin, 1885).

A. s. cracens of Petén and British Honduras probably will be recorded from Quintana Roo in due time.

WEIGHT. Two females weighed 16.0 and 16.2 grams; the unsexed specimens 16.2 and 16.3 grams.

POOECETES GRAMINEUS GRAMINEUS (Gmelin).
Vesper Sparrow.

Fringilla graminea Gmelin, Syst. Nat., 1:922, 1789. (New York.)

RANGE. The species breeds from Cape Breton Island and British Columbia southward over most of the United States, with the exception of the southeastern part; the race in the eastern half of the range; winters in the southeastern United States and Bermuda; one record from Yucatán (Cole, 1906).

REMARKS. Cole (1906) collected a single specimen of Vesper Sparrow

at Chichén Itzá on April 4, 1904. It is either accidental or extremely rare on the Peninsula.

CHONDESTES GRAMMACUS GRAMMACUS (Say).
Lark Sparrow.

Fringilla grammaca Say, in Long, Exped. Rocky Mtns., 1:139, 1823. (Bellefontaine, Missouri.)

RANGE. The species breeds in the western two-thirds of the United States, in southern Canada from British Columbia east to Ontario, and in Mexico south to Durango; the race from Minnesota and Louisiana eastward; winters from Mississippi and Texas to eastern and southern Mexico, and casually in Cuba; one record from Yucatán.

SPECIMEN. Yucatan—Santa Clara, 1 ♀, Sept. 21, 1951.

REMARKS. This specimen, which is in the Legters collection, was brought in by a local collector. It is not known whether the bird was alone or in a flock.

AIMOPHILA PETENICA PETENICA (Salvin).
Yellow-carpalled Sparrow.

Ammodromus petenicus Salvin, Zool. Soc. London, Proc., 31:189, 1863. (Petén, Guatemala.)

RANGE. The species, which is sometimes considered conspecific with *A. botterii*, ranges from Veracruz to Costa Rica; the race known from Veracruz, Chiapas, Yucatán, and Petén.

SPECIMENS. Yucatán—Progreso, 1 ♀, Sept. 8, 1950; Mérida, 1 ♂, 1 ♀, Oct. 7, 1 ♂, Oct. 9, 1 ♂, Oct. 19, 1 ♂, Oct. 20, 1950.

HABITAT. Low arid scrub.

REMARKS. Heretofore there was no record of this species from the Peninsula. All of the specimens were taken by a local collector for the Legters collection, and no information is available on the abundance or exact habitat of these birds.

The unsexed bird and the male collected on October 20 are young with streaked throats. The entire series is in extremely worn plumage with the molt just beginning. The specimens appear referable to the nominate form, but when fresh material is available it will be surprising if the population in arid Yucatán is not found to be subspecifically separable from that of the humid forest of Petén.

MELOSPIZA LINCOLNII LINCOLNII (Audubon).
Lincoln Sparrow.

Fringilla lincolnii Audubon, Bds. Am. (folio), 2:193, 1834. (Near mouth of Natashquan River, Quebec.)

RANGE. The species breeds from Alaska across northern Canada and south to northern New York and in the western mountains south to Arizona; the race throughout the range with the exception of the Alaskan Archipelago and the mountains of the western United States; winters in the southwestern United States and probably over much of Mexico to Guatemala; casual in Panama and the Greater Antilles; one record from Quintana Roo (Peters, 1913) and one from Yucatán (Boucard, 1883).

REMARKS. I have examined the specimen collected by Peters (1913) and find it referable to the nominate form, rather than to recently described *M. l. alticola*.

Gaumer (*in* Boucard, 1883) supposedly found Lincoln's Sparrows in large flocks during January and February at Izamal. It is strange that there has been but one record since that time if the species occurred in great numbers.

COMPOSITION, DISTRIBUTION, AND ORIGIN OF THE AVIFAUNA

There has been recorded on the Peninsula of Yucatán, on its associated islands, and in the waters surrounding it, an avifauna of 429 species, with an aggregate of 487 species and races. Doubtlessly, this number will be increased in the future, particularly through the addition of transients and pelagic birds, but it is unlikely that any additions will materially alter the analysis and conclusions set forth below. A cautious estimate is that even with careful year-long observations the known avifauna will not be increased by much more than five per cent of the present total.

NONBREEDING SPECIES. Of the 429 species known from the region, 285 (330 including races) breed, or are presumed to breed, 115 (122 including races) occur as winter residents, 26 (32 including races) are transients (Table 1), and three (*S. s. sula*, *Tyrannus d. dominicensis*, and *Tyrannus cubensis*) are probably of accidental occurrence. In addition, the populations of 13 species included in the breeding list are augmented during the winter by individuals from the north. These are chiefly herons and marine birds.

TABLE 1
TRANSIENTS

Accipiter cooperii (?)	Catharus ustulatus swainsoni (?)
Steganopus tricolor	Catharus m. minimus
Chlidonias nigra surinamensis	Catharus f. fuscescens
Chordeiles minor (6 subsp.)	Vireo o. olivaceus
Caprimulgus carolinensis	Dendroica cerulea
Chaetura pelagica	Dendroica fusca
Tyrannus tyrannus	Dendroica pensylvanica
Contopus virens	Dendroica castanea
Empidonax virescens	Seiurus motacilla (?)
Progne s. subis	Wilsonia canadensis
Petrochelidon p. pyrrhonota	Dolichonyx oryzivorus
Riparia r. riparia	Piranga olivacea
Hirundo rustica erythrogaster	Spiza americana

The nonbreeding species are similar to those found elsewhere in southern Mexico and in adjacent areas of Central America, although there are a few exceptions. Being on one of the main migration routes, the Peninsula receives some birds which are unknown or casual in other parts of Mexico. The Scarlet Tanager and Prothonotary Warbler are two of these. The latter is unknown in Mexico north of Campeche and is a rare transient in the

West Indies, but it is fairly abundant on the Peninsula during the migration seasons, with a few individuals apparently wintering.

Among the noteworthy visitants are the following: Swainson Warbler, otherwise known to winter only in the Greater Antilles; the Black-throated Blue Warbler, which occurs sparingly on Isla Cozumel and on the mainland from Guatemala to Colombia, but is chiefly an Antillean winter resident; the Palm Warbler, a common coastal and insular visitor in the Yucatán region and in the Greater Antilles, but unknown from other parts of Mexico or Central America; the Cape May Warbler, which appears to winter chiefly in the Greater Antilles, but has been found on Isla Mujeres, Isla Cozumel, and Banco Chinchorro, as well as on islands off the coast of Central America; and *Turdus migratorius achrusterus*, the race breeding in the southeastern United States, which has been known to winter in western Cuba in small numbers, but otherwise was believed not to range beyond the southern United States.

The most unexpected winter resident is *Stelgidopertyx ruficollis stuarti*, a form from the highlands of Guatemala and Mexico. This seems to be a unique situation, for the remainder of the nonbreeding species, with the possible exception of some water birds, are apparently derived entirely from regions to the north of Mexico.

SPECIES BREEDING ON THE MAINLAND. If we remove from consideration the 13 species which are entirely marine, and also wide-ranging *Coragyps atratus* and *Cathartes aura*, it is found that the breeding birds of the mainland fall into three broad categories (Table 2): those species whose distribution is usually dependent on the presence of water; those which characteristically occur in more humid, frequently densely forested, areas; and those which are found in drier, often more open, regions.

TABLE 2

GENERAL HABITAT PREFERENCES OF SPECIES BREEDING ON THE MAINLAND

A. Species dependent on the presence of water

Podiceps dominicus	Botaurus pinnatus
Podilymbus podiceps	Mycteria americana
Anhinga anhinga	Jabiru mycteria
Butorides virescens	Eudocimus alba
Florida caerulea	Ajaia ajaja
Dichromanassa rufescens	Phoenicopterus ruber
Casmerodius albus	Dendrocygna autumnalis
Leucophoyx thula	Cairina moschata
Hydranassa tricolor	Elanus leucurus
Agamia agami	Elanoides forficatus
Nyctanassa violacea	Leptodon cayanensis
Cochlearius cochlearius	Chondrohierax uncinatus
Heterocnus mexicanus	Rosthamus sociabilis

TABLE 2—*Continued*GENERAL HABITAT PREFERENCES OF SPECIES
BREEDING ON THE MAINLAND

A. Species dependent on the presence of water (cont.)

Hypomorphnus urubitinga	Heliornis fulica
Buteogallus anthracinus	Jacana spinosa
Busarellus nigricollis	Himantopus himantopus
Pandion haliaetus	Ceryle torquata
Aramus guarauna	Chloroceryle amazona
Rallus longirostris	Chloroceryle americana
Aramides cajanea	Chloroceryle aenea
Aramides axillaris	Iridoprocne albilinea
Laterallus ruber	Dendroica petechia
Porphyryla martinica	

B. Species characteristic of more humid areas

Tinamus major	Amazilia candida
Crypturellus soui	Amazilia cyanocephala
Crypturellus boucardi	Amazilia tzacatl
Sarcoramphus papa	Trogon massena
Harpagus bidentatus	Trogon violaceus
Ictinia plumbea	Hylomanes momotula
Accipiter bicolor	Momotus momota
Harpia harpyja	Galbula ruficauda
Spizastur melanoleucus	Notharcus macrorhynchos
Spizaetus ornatus	Aulacorhynchus prasinus
Spizaetus tyrannus	Pteroglossus torquatus
Geranospiza caerulescens	Ramphastos sulfuratus
Micrastur semitorquatus	Piculus rubiginosus
Micrastur ruficollis	Celeus castaneus
Crax rubra	Veniliornis fumigatus
Penelope purpurascens	Phloeoceastes guatemalensis
Odontophorus guttatus	Dendrocincla anabatina
Columba cayennensis	Dendrocincla homochroa
Columba speciosa	Sittasomus griseicapillus
Columba nigrirostris	Dendrocolaptes certhia
Columbigallina minuta	Lepidocolaptes souleyetii
Claravis pretiosa	Xenops minutus
Leptotila plumbeiceps	Sclerurus guatemalensis
Geotrygon montana	Thamnophilus doliatus
Ara macao	Dysithamnus mentalis
Aratinga astec	Microhoppas quixensis
Pionopsitta haematotis	Cercomacra tyrannina
Pionus senilis	Formicarius analis
Amazona autumnalis	Atila spadiceus
Amazona farinosa	Platypsaris aglaiae
Ciccaba nigrolineata	Tityra inquisitor
Nyctibius griseus	Pipra mentalis
Phaethornis longuemareus	Manacus candei
Campylopterus curvipennis	Schiffornis turdinus

TABLE 2—*Continued*GENERAL HABITAT PREFERENCES OF SPECIES
BREEDING ON THE MAINLAND

B. Species characteristic of more humid areas (cont.)

<i>Legatus leucophaeus</i>	<i>Amblycercus holosericeus</i>
<i>Myiodynastes maculatus</i>	<i>Psomocolax oryzivorus</i>
<i>Myiobius barbatus</i>	<i>Icterus prothemelas</i>
<i>Onychorhynchus coronatus</i>	<i>Icterus mesomelas</i>
<i>Platyrinchus mystaceus</i>	<i>Tanagra lauta</i>
<i>Tolmomyias sulphurescens</i>	<i>Tanagra gouldi</i>
<i>Rhynchoeyclus brevirostris</i>	<i>Phlogothraupis sanguinolenta</i>
<i>Todirostrum cinereum</i>	<i>Habia rubica</i>
<i>Todirostrum sylvia</i>	<i>Habia gutturalis</i>
<i>Oncostoma cinereigulare</i>	<i>Lanio aurantius</i>
<i>Pipromorpha oleaginea</i>	<i>Chlorophanes spiza</i>
<i>Psilorhinus mexicanus</i>	<i>Cyanerpes cyaneus</i>
<i>Henicorhina leucosticta</i>	<i>Saltator atriceps</i>
<i>Poliophtila plumbea</i>	<i>Saltator maximus</i>
<i>Ramphocaenus rufiventris</i>	<i>Saltator coerulescens</i>
<i>Hylophilus ochraceiceps</i>	<i>Caryothraustes poliogaster</i>
<i>Hylophilus decurtatus</i>	<i>Cyanocompsa cyanoides</i>
<i>Basileuterus culicivorus</i>	<i>Arremonops conirostris</i>
<i>Gymnostinops montezuma</i>	

C. Species characteristic of drier areas

<i>Crypturellus cinnamomeus</i>	<i>Tapera naevia</i>
<i>Buteo albicaudatus</i>	<i>Dromococcyx phasianellus</i>
<i>Buteo magnirostris</i>	<i>Geococcyx velox</i>
<i>Buteo nitidus</i>	<i>Tyto alba</i>
<i>Herpetotheres cachinnans</i>	<i>Otus guatemalae</i>
<i>Polyborus plancus</i>	<i>Bubo virginianus</i>
<i>Falco ruficularis</i>	<i>Glaucidium brasilianum</i>
<i>Falco femoralis</i>	<i>Ciccaba virgata</i>
<i>Ortalis vetula</i>	<i>Chordeiles acutipennis</i>
<i>Colinus nigrogularis</i>	<i>Nyctidromus albicollis</i>
<i>Dactylortyx thoracicus</i>	<i>Otophanes yucatanicus</i>
<i>Meleagris ocellata</i>	<i>Caprimulgus salvini</i>
<i>Columba flavirostris</i>	<i>Chaetura vauxi</i>
<i>Zenaidura macroura</i>	<i>Anthracothonax prevostii</i>
<i>Zenaida aurita</i>	<i>Chlorostilbon canivetii</i>
<i>Zenaida asiatica</i>	<i>Amazilia rutila</i>
<i>Columbigallina passerina</i>	<i>Amazilia yucatanensis</i>
<i>Columbigallina talpacoti</i>	<i>Doricha eliza</i>
<i>Leptotila verreauxi</i>	<i>Trogon citreolus</i>
<i>Leptotila jamaicensis</i>	<i>Trogon collaris</i>
<i>Amazona xantholara</i>	<i>Eumomota superciliosa</i>
<i>Amazona albifrons</i>	<i>Dryocopus lineatus</i>
<i>Coccyzus minor</i>	<i>Centurus aurifrons</i>
<i>Piaya cayana</i>	<i>Centurus pygmaeus</i>
<i>Crotophaga sulcirostris</i>	<i>Dendrocopus scalaris</i>

TABLE 2—*Continued*GENERAL HABITAT PREFERENCES OF SPECIES
BREEDING ON THE MAINLAND

C. Species characteristic of drier areas (cont.)

Xiphorhynchus flavigaster	Turdus nudigenis
Synallaxis erythrorhax	Polioptila caerulea
Pachyrampus major	Polioptila albiloris
Tityra semifasciata	Cyclarhis gujanensis
Pyrocephalus rubinus	Vireo griseus
Muscivora tyrannus	Vireo olivaceus
Tyrannus melancholicus	Vireo altiloquus
Myiodynastes luteiventris	Geothlypis poliocephala
Megarhynchus pitangua	Granatellus sallaei
Myiozetetes similis	Tangavius aeneus
Pitangus sulphuratus	Cassidix mexicanus
Myiarchus tyrannulus	Dives dives
Myiarchus yucatanensis	Icterus chrysater
Myiarchus tuberculifer	Icterus auratus
Contopus cinereus	Icterus gularis
Elaenia flavogaster	Icterus cucullatus
Elaenia viridicata	Agelaius phoeniceus
Camptostoma imberbe	Sturnella magna
Progne chalybea	Tanagra affinis
Petrochelidon fulva	Thraupis episcopus
Stelgidopteryx ruficollis	Thraupis abbas
Xanthoura yncas	Prianga roseo-gularis
Cissilopha san-blasiana	Eucometis penicillata
Campylorhynchus zonatus	Richmondia cardinalis
Campylorhynchus brunneicapillus	Cyanocompsa parellina
Thryothorus ludovicianus	Tiaris olivacea
Thryothorus maculipectus	Sporophila torqueola
Troglodytes musculus	Volatina jacarina
Uropsila leucogastra	Spinus psaltria
Dumetella glabrirostris	Arremonops rufivirgatus
Mimus gilvus	Aimophila penetia

This is a fairly natural arrangement, although at times the placement of individual species must be somewhat arbitrary. For example, the "Mangrove Warbler" subspecies group of *Dendroica petechia* is almost restricted to mangroves and, therefore, to the vicinity of water, whereas the "Yellow Warbler" and "Golden Warbler" groups of the same species exist in entirely different habitats. There are many species in which the difficulties are more subtle, especially among some of the hawks and flycatchers. However, the usefulness of the system is not impaired if one bears in mind that it is, in part, subjective.

Among the 262 species in Table 2, the following seven are endemic to the Peninsula: *Meleagris ocellata*, *Amazona xantholara*, *Otophanes yucatanicus*, *Myiarchus yucatanensis*, *Icterus auratus*, *Dumetella glabrirostris*,

and *Piranga roseo-gularis*. The first five are monotypic, while *Dumetella glabrirostris* splits into a mainland and an insular race and *Piranga roseo-gularis* into two mainland races and one on Isla Cozumel. Of the remaining 255 species, 52 are represented by single indigenous subspecies and five (*Ortalis vetula*, *Colinus nigrogularis*, *Dactylortyx thoracicus*, *Habia gutturalis* (?), and *Richmondia cardinalis* divide into two subspecies each on the mainland. Thus, as is shown in Table 3, there are 70 endemic species and subspecies on the mainland; a few of these also occur on adjacent islands, but those forms which are confined to the islands will be considered later.

TABLE 3
PENINSULAR ENDEMICS AND THEIR HABITAT
PREFERENCES ¹

A. Species dependent on the presence of water

Dichromanassa rufescens colorata

Rallus longirostris pallidus

B. Species characteristic of more humid areas

*Campylopterus curvipennis pampa**
Momotus momota exiguus
*Pteroglossus torquatus erythrozonus**
Dendrocincla anabatina typhla
*Sittasomus griseicapillus gracileus**
*Dendrocolaptes certhia legtersi**
Thamnophilus doliatus yucatanensis
Formicarius analis pallidus
Attila spadiceus gaumeri

Platypsaris aglaiae yucatanensis
*Platyrinchus mystaceus timothei**
Psilorhinus mexicanus vociferus
*Ramphocaenus rufiventris ardeleo**
Habia rubica nelsoni
Habia gutturalis insularis
*Habia gutturalis peninsularis** ²
Saltator atriceps raptor
*Saltator coerulescens yucatanensis**

C. Species characteristic of drier areas

*Crypturellus cinnamomeus goldmani**
Buteo magnirostris conspectus
*Ortalis vetula intermedia**
Ortalis vetula pallidiventris
Colinus nigrogularis persiccus
Colinus nigrogularis caboti
Dactylortyx thoracicus sharpei
Dactylortyx thoracicus subsp.
*Meleagris ocellata**
Zenaida aurita yucatanensis
Leptotila jamaicensis gaumeri
*Amazona xantholora**
Otus guatemalae thompsoni
Otophanes yucatanicus

*Caprimulgus salvini badius**
Chaetura vauxi gaumeri
*Amazilia yucatanensis yucatanensis**
*Eumomota superciliosa superciliosa**
*Centurus aurifrons dubius**
Centurus pygmaeus rubricornis
*Dendrocopos scalaris parvus** ³
Xiphorhynchus flavigaster yucatanensis
Pachyrhamphus major itzensis
Myiarchus yucatanensis
Myiarchus tuberculifer platyrhynchus
Petrochelidon fulva citata
Stelgidopteryx ruficollis ridgwayi
*Xanthoura yncas maya**

1. Does not include strictly insular endemics, although forms which occur both on the mainland and on the islands are included.

2. Probably not separable from *H. g. insularis*.

3. *D. s. ridgwayi*, of SE. Veracruz and Tabasco, probably not separable.

* Also found in adjacent British Honduras, Petén, or Tabasco.

TABLE 3—*Continued*

PENINSULAR ENDEMICS AND THEIR HABITAT PREFERENCES

C. Species characteristic of drier areas (cont.)

<i>Cissilopha san-blasiana yucatanica</i>	<i>Icterus chrysater mayensis</i>
<i>Campylorhynchus brunneicapillus yucatanicus</i>	<i>Icterus auratus</i>
<i>Thryothorus ludovicianus albinucha</i> *	<i>Icterus gularis yucatanensis</i> *
<i>Thryothorus maculipectus canobrunneus</i> *	<i>Icterus cucullatus igneus</i> *
<i>Uropsila leucogastra brachyurus</i>	<i>Agelaius phoeniceus pallidulus</i>
<i>Dumetella glabrirostris glabrirostris</i> *	<i>Sturnella magna griscomi</i>
<i>Mimus gilvus leucophaeus</i> *	<i>Piranga roseo-gularis roseo-gularis</i>
<i>Polioptila albiloris albiventris</i>	<i>Piranga roseo-gularis tincta</i> *
<i>Cyclarhis gujanensis yucatanensis</i> *	<i>Richmondia cardinalis yucatanica</i>
<i>Granatellus sallaei boucardi</i>	<i>Richmondia cardinalis flammigera</i>
	<i>Spinus psaltria jouyi</i>
	<i>Arremonops rufivirgatus verticalis</i>

* Also found in adjacent British Honduras, Petén, or Tabasco.

The list of endemics (Table 3) could be lengthened slightly by the addition of *Tinamus major percautus*, *Leptotila verreauxi fulviventris*, *Pyrocephalus rubinus blattus*, and *Eucometis penicillata pallida*, races which are found on the Peninsula but which commonly range as far north as central Veracruz and as far south as Honduras. Brodkorb (1943a, p. 17) considered the latter three to be "characteristic Yucatán forms," but I prefer to draw the line a little more sharply. While these races may be autochthonous¹ to the Peninsula, their ranges are too extensive to be reasonably certain.

When the Peninsular avifauna is examined with particular regard to the general ecological requirements of each species, as well as to its geographical distribution, a relatively simple set of patterns of speciation becomes apparent. This, in turn, offers an insight into the possible origin of the avifauna.

Most of the 45 species whose distribution is dependent on the presence of water are highly mobile, at least on occasion. Throughout their ranges there are few barriers too great for them to by-pass and, consequently, there is little intraspecific differentiation. Since the Yucatán Peninsula is almost lacking in geographical features that might prove to be effective in isolating populations of birds with these habitat requirements, no endemism is to be expected. There are, nevertheless, two indigenous races: *Dichromanassa rufescens colorata* and *Rallus longirostris pallidus*. The former is a peculiar case of riation for which there appears to be no certain explanation, although it has been suggested (p. 34) that the race may have arisen through genetic drift during a period when the popu-

1. The term "autochthonous" is used here in the sense of having originated in a given region but now occurring beyond that area. (*Vide*, Mayr, 1946.)

lation was very small. The latter endemic is a member of a sedentary and notoriously plastic species; it would be notable only if it had failed to differentiate on the Peninsula.

The 105 species that are characteristic of a more humid habitat are of greater interest. This element of the avifauna, naturally, is almost confined to the zone of rain forest. As the rain forest decreases in luxuriance from south to north there is a corresponding decrease in the number of species typical of humid regions, but a few of the more adaptable range into the deciduous forest and even into the scrub. Taken as a whole, without reference to the relative abundance of the species, this list (Table 2 B) is merely a slightly depauperate reflection of the avifauna of adjacent Petén, British Honduras, and Tabasco.

Although the lower half of the Peninsula is covered by rain forest, it is nevertheless drier than the districts immediately to the south. Approximately 16 per cent (17 species) of the avifauna characteristic of more humid regions responds to the decrease in rainfall by forming endemic races (Table 3 B). Without exception, each race differs from its contiguous form by being more pallid and in most cases also by being smaller.

The species which have differentiated are those which range well north, but not every species which ranges well north differentiates. For example, *Aratinga astec* and *Tanagra lauta* extend into the deciduous forest, with the former even occurring at times in the coastal scrub, yet neither has subspeciated on the Peninsula. Both birds have extensive ranges but each is divisible into only two races. In contrast, the 17 species with Peninsular representatives are forms which have a number of localized subspecies elsewhere and which are, obviously, much more plastic.

The situation is not so simple for the 112 species characteristically found in drier areas (Table 2 C). Seven of these are endemic to the Peninsula (*Meleagris ocellata*, *Amazona xantholara*, *Otophanes yucatanica*, *Myiarchus yucatanensis*, *Icterus auratus*, *Dumetella glabrirostris*, and *Piranga roseo-gularis*) and three (*Zenaida aurita*, *Leptotila jamaicensis*, and *Vireo altiloquus*) occur only on the Peninsula and its islands, and in the West Indies. *Centurus pygmaeus*, a member of an exceedingly complex genus, appears to be restricted to the Peninsula, Isla Cozumel, and Bonacca Island, although some authorities (e.g., Peters, 1948) believe it conspecific with a form which ranges from Costa Rica to Venezuela. In either case, the Peninsular bird is notably isolated.

Most of the remaining 101 species are distributed in drier areas well north into Mexico proper, with a few reaching the southern United States; there is a preponderance of species whose occurrence in Mexico is confined to the dry eastern slope. Southward they occur through much of Central America, some of them occasionally into South America.

A few species with more limited, or unusual, ranges are the following: *Colinus nigrogularis*, which, exclusive of the Peninsula, is found only in Petén, British Honduras, and Honduras; *Amazilia yucatanensis*, a species confined to the eastern slope from southern Texas to British Honduras;

Doricha eliza, which is otherwise known only from central Veracruz; *Petrochelidon fulva*, an example of a curious disjunct distribution, appears in Texas and northeastern Mexico, on the Yucatán Peninsula, in the Greater Antilles, and in northwestern South America; *Cissilopha san-blasiana*, which ranges along the Pacific slope from Nayarit to Guerrero and on the eastern slope only from Tabasco to British Honduras; *Thryothorus ludovicianus*, the Carolina Wren, which occurs from the eastern United States to San Luis Potosí, reappears in the region of the Peninsula and eastern Guatemala, and again in Nicaragua; *Polioptila albiloris*, an arid region species distributed along the Pacific slope from Nayarit to Costa Rica, but on the eastern slope is isolated at the tip of the Peninsula.

Of the seven endemic species, the only one to subspeciate on the mainland is *Piranga roseo-gularis*, which has been differentiated into a northern and a southern race.

Zenaida aurita and *Leptotila jamaicensis*, two of the three species whose ranges are chiefly Antillean, have endemic representatives on the mainland, as has *Centurus pygmaeus*, the form with uncertain affinities.

If the endemic species, the West Indian element, and *Centurus pygmaeus* are excluded, it is found that Peninsular subspeciation has occurred in 35 of the 101 species which remain. *Ortalis vetula*, *Colinus nigrogularis*, *Dactylortyx thoracicus*, and *Richmondia cardinalis* have each split into two races in the region; the balance into one each.

The majority of the species from the drier region are more or less isolated from other populations, although there is considerable variation. *Tyrannus melancholicus* and *Icterus cucullatus*, for example, regularly take advantage of areas of low vegetation within the more humid zone and, therefore, narrow the gap between populations. Gene flow, while considerably reduced, is probably not altogether cut off. On the other hand, 15 species are confined to the northern part of the Peninsula, often to the narrow belt of scrub at the tip, and are probably as effectively isolated as they would be on islands. These species are: *Polyborus plancus*, *Falco femoralis*, *Colinus nigrogularis*, *Geococcyx velox*, *Chordeiles acutipennis*, *Doricha eliza*, *Eumomota superciliosa*, *Petrochelidon fulva*, *Campylorhynchus brunneicapillus*, *Thryothorus ludovicianus*, *Polioptila albiloris*, *Sturnella magna*, *Spinus psaltria*, *Arremonops rufivirgatus* (also occurs at the base of Peninsula, but well isolated from other populations), and probably *Aimophila petenica*.

Aimophila petenica is known on the Peninsula from a few badly worn specimens from the vicinity of Mérida and it is not certain that it has failed to differentiate, but of the remaining 14 isolated species the following five appear to be phenotypically indistinguishable from their nearest neighbors: *Polyborus plancus*, *Falco femoralis*, *Geococcyx velox*, *Chordeiles acutipennis*, and *Doricha eliza*. *Doricha eliza* is monotypic; the other four birds are members of widely distributed races. The nine differentiated forms, as is the case with the humid region birds, are species with a number of geographic representatives.

Pyrocephalus rubinus, *Icterus chrysater*, *Tanagra affinis*, and *Tiaris olivacea* are almost restricted to the northern half of the Peninsula, but they are found very occasionally in the south and are, consequently, not so effectively isolated. The only one of this group to subspeciate is *Icterus chrysater*.

Thus, of 19 isolated, or nearly isolated, species, Peninsular raiation has taken place in slightly more than half. Furthermore, the group comprises 19 per cent of the dry region avifauna, of predominantly continental distribution, but about 28 per cent of the endemism within the drier area has taken place in this segment. This rate might be considered higher than that to be expected by chance (χ^2 test; $0.10 > P > 0.05$), nevertheless, it does indicate that complete (or almost complete) isolation is not so important a factor in Peninsular subspeciation as might have been supposed.

In turn, this suggests that the isolated element may be composed of two types of species, with various intermediates. First, those species whose isolation is due to the fact that they are aggressive and range widely, and therefore, discovered a suitable habitat at the end of the Peninsula. These are the birds which display little phenotypic variation throughout their ranges.

The reason for this may be threefold: 1) because there is too much gene exchange among populations to permit the establishment of local races; 2) because there has been insufficient time since the dispersal of the species for local differentiation; 3) because the genetic constitution of the species is so well buffered that genetic differences between populations do not affect the visible phenotype. Since it is assumed that the gene flow between the Peninsular populations and other populations is absent or negligible, one, or both, of the latter two hypotheses must explain the phenotypic stability of certain Peninsular species. It is not possible to go further with our present knowledge.

The second type within the isolated element is composed of those species which are less aggressive and more sedentary. Because of this nature, it is assumed that there was much less likelihood that they would discover the availability of a suitable habitat existing at the end of the Peninsula, i.e., their presence in that zone is probably more fortuitous than in the first type. Regional morphological variation is common within these species, presumably because there is little genic interchange among their populations, because the species have been dispersed long enough for subspecies to develop, and because the genetic constitution of the species is not sufficiently buffered to conceal visible expressions of genetic differences.

Although this discussion has centered about birds which are characteristic of the drier region and which are isolated there, it is applicable to the entire avifauna. For example, it has been shown that the avifauna of the more humid region is composed of species (a) that subspeciate freely throughout their ranges, including the Peninsula, and (b) those species which seldom do so anywhere, and do not do so on the Peninsula. The factors accounting for variation from species to species in the amount of

intraspecific differentiation appear to be similar in all birds, and for that matter, probably in all animals.

Among the 82 species which are less completely isolated, and which make up 81 per cent of the dry region avifauna of chiefly continental distribution, subspeciation has occurred in 25 species. In other words, 72 per cent of the dry region endemics are found within this group, which is a rate possibly a little less than to be expected by chance, as has been explained above.

Once again it is found that the species which have differentiated are those which have done so elsewhere, and those which have not are those which are relatively stable everywhere.

The races endemic to the drier region do not display the same relative uniformity of pattern in their phenotypes as is found between those forms endemic to the humid zone. When compared with the race or races to which they are geographically closest, a general tendency toward pallidness and a diminution in size is noted, but it is not characteristic of all. In fact, the populations which are phenotypically most dissimilar to their nearest races are those which depart from the trend toward paleness and smallness, and they are usually those which are most isolated. This is a phenomenon common in insular populations which, lacking the stabilizing influence of a large gene pool, at times bear only the most distant resemblance to related races. The dry end of the Peninsula approximates the isolation of an island and modified instances of the phenomenon are seen, for example, in *Arremonops rufivirgatus verticalis* which differs, from all other populations of the species, among other respects, in that its head streaks are nearly black, rather than brown—a difference much more distinct than any of those found between other races. Other examples are *Petrochelidon fulva citata* which is more richly colored than related subspecies; and *Sturnella magna grisea* which, while being more pallid than the two nearest races (*S. m. mexicana* and *S. m. inexpectata*) is larger than either.

SPECIES BREEDING ON THE ISLANDS. Exclusive of marine birds and vultures, 90 species breed, or are believed to breed, on the islands off the Peninsula (Table 4). In addition, the following five species are presumed to occur accidentally: *Tyrannus dominicensis*, *Tyrannus cubensis*, *Myiobius barbatulus*, *Pipromorpha oleaginea*, and *Cyanocampa parcellina*, and 12 species have been recorded, chiefly by Gaumer, but for various reasons are considered to be hypothetical: *Ortalis vetula*, *Eumomota superciliosa*, *Dendrocincla homochroa*, *Thamnophilus doliatus*, *Platypsaris aglaiae*, *Pipra mentalis*, *Pyrocephalus rubinus*, *Myiozetetes similis*, *Myiarchus yucatanensis*, *Cissilopha san-blasiana*, *Turdus nudigenis*, and *Poliptila albiloris*. The occurrence of some of the latter group may one day be confirmed, but they are obviously of little import in the over-all picture if they have been found only once in 70 or more years.

Eight of the breeding forms are not found on the mainland of the

TABLE 4
INSULAR RESIDENTS ¹

Species	Cozumel	Mujeres	Holbox	Contoy	Chinchorro
<i>Podiceps dominicus dominicus</i>	x				
<i>Podiceps dominicus (brachypterus)</i>	x				
<i>Anhinga anhinga leucogaster</i>	x				
<i>Butorides virescens maculatus</i>	x				x
<i>Florida caerulea</i>	x	x	x	x	x
<i>Dichromanassa rufescens rufescens</i>	x		x		x
<i>Casmerodius albus egretta</i>	x	x	x	x	x
<i>Leucophoyx thula thula</i>	x	x	x	x	x
<i>Hydranassa tricolor ruficollis</i>	x		x		x
<i>Nyctanassa violacea violacea</i>	x	x	x	x	x
<i>Cochlearius cochlearius zeledoni</i>	x			x	
<i>Heterocnus mexicanus mexicanus</i>	x				
<i>Mycteria americana</i>	x		x	x	x
<i>Eudocimus alba</i>	x		x	x	x
<i>Ajaia ajaja</i>	x		x	x	
<i>Phoenicopterus ruber ruber</i>	x				
<i>Dendrocygna autumnalis autumnalis</i>	x				
<i>Cairina moschata</i>	x				
BUTEO MAGNIROSTRIS GRACILIS ²	x		x		Subsp.
<i>Buteo brachyurus</i>	x				
<i>Buteogallus anthracinus anthracinus</i>	x	x	x		
<i>Busarellus nigricollis nigricollis</i>			x		
CRAX RUBRA GRISCOMI	x				
<i>Ortalis vetula pallidiventris</i>	?	?	?		
<i>Aramus guarauna dolosus</i>	x				
RALLUS LONGIROSTRIS GROSSI			Subsp.		x
<i>Aramides cajanea albiventris</i>	x				
<i>Aramides axillaris</i>		x			
<i>Laterallus ruber</i>	x				
<i>Porphyryla martinica</i>	x				
<i>Jacana spinosa spinosa</i>	x				
<i>Himantopus himantopus mexicanus</i>	x	x	x	x	x
<i>Columba leucocephala</i>	x				
<i>Zenaida aurita yucatanensis</i>	x	x	x		
<i>Zenaida asiatica asiatica</i>	x	x	x		
<i>Columbigallina passerina pallescens</i>	x	x	x		
<i>Columbigallina talpacoti rufipennis</i>	x				
<i>Leptotila jamaicensis gaumeri</i>	x	x	x		
<i>Aratinga astec astec</i>			x		
<i>Amazona xantholara</i>	x				
<i>Coccyzus minor continentalis</i>	x	x	x		
<i>Piaya cayana thermophila</i>		x	x		
<i>Crotophaga ani</i>	x		x		
<i>Crotophaga sulcirostris sulcirostris</i>	x	x	x		

1. Exclusive of birds which are totally marine and of *Coragyps atratus* and *Cathartes aura*.

2. Insular, or primarily insular, endemics capitalized.

x Present.

() Doubtfully valid race.

? Questionable record.

TABLE 4—*Continued*

Species	Cozumel	Mujeres	Holbox	Contoy	Chinchorro
<i>Glaucidium brasilianum ridgwayi</i>	x				
<i>Chordeiles acutipennis micromeris</i>	x	x			
<i>Nyctidromus albicollis yucatanensis</i>	x	x	x		
<i>Caprimulgus salvini badius</i>	x				
<i>Chaetura vauxi gaumeri</i>	x				
<i>Anthracothonax prevostii prevostii</i>	x	x	x		x
<i>Chlorostilbon canivetii canivetii</i>			x		
CHLOROSTILBON CANIVETII FORFICATUS	x	x			
<i>Amazilia rutila rutila</i>		x	x	x	
<i>Doricha eliza</i>			x		
<i>Chloroceryle aenea stictoptera</i>	x				
<i>Eumomota superciliosa superciliosa</i>	?				
CENTURUS AURIFRONS LEEI	x				
CENTURUS PYGMAEUS PYGMAEUS	x				
<i>Dendrocopus scalaris (parvus)</i>	x		x		
<i>Dendrocincla homochroa homochroa</i>	?	?			
<i>Thamnophilus doliatus yucatanensis</i>	?				
<i>Attila spadiceus gaumeri</i>		?	?		
ATTILA SPADICEUS COZUMELAE	x				
<i>Platypsaris aglaiae yucatanensis</i>	?		?		
<i>Pipra mentalis mentalis</i>		?			
<i>Pyrocephalus rubinus blattae</i>	?				
<i>Tyrannus melancholicus chloronotus</i>	x	x	x	x	
<i>Tyrannus dominicensis dominicensis</i>	*				
<i>Tyrannus cubensis</i>		*			
<i>Myiozetetes similis texensis</i>	?				
<i>Pitangus sulphuratus guatemalensis</i>	x	x			
<i>Myiarchus tyrannulus cooperi</i>	x				
<i>Myiarchus yucatanensis</i>	?				
<i>Contopus cinereus brachytarsus</i>	x				
<i>Myiobius barbatus sulphureipygus</i>	*				
<i>Todirostrum cinereum finitimum</i>		x			
<i>Elaenia flavogaster subpagana</i>		x			
ELAENIA MARTINICA REMOTA	x	x	x		
ELAENIA MARTINICA CHINCHORRENSIS					x
<i>Elaenia viridicata placens</i>	x	x			
<i>Camptostoma imberbe</i>			x		
<i>Pipromorpha oleaginea assimilis</i>		*			
<i>Iridoprocne albilinea albilinea</i>			x		x
XANTHOURA YNCAS (COZUMELAE)	x				
<i>Cissilopha san-blasiana yucatanica</i>		?			
TROGLODYTES MUSCULUS BEANI	x				
TOXOSTOMA LONGIROSTRE GUTTATUM	x				
<i>Dumetella glabrirostris glabrirostris</i>		x	x		

* Probably accidental.

TABLE 4—Continued

Species	Cozumel	Mujeres	Holbox	Contoy	Chinchorro
DUMETELLA GLABRIROSTRIS COZUMELANA	x				
Mimus gilvus leucophaeus	x	x	x		
Turdus nudigenis tamaulipensis	?	?			
POLIOPTILA CAERULEA COZUMELAE	x				
Polioptila albiloris albiventris	?				
CYCLARHIS GUJANENSIS INSULARIS	x				
VIREO BAIRDI	x				
Vireo griseus semiflavus		x	x		
Vireo altiloquus magister	x	x	x		
DENDROICA PETECHIA RUFIVERTEX	x				
Dendroica petechia bryanti			x	x	x
COEREBA FLAVEOLA CABOTI	x		x		
Cassidix mexicanus mexicanus	x	x		x	x
Icterus gularis yucatanensis	x				
Icterus cucullatus igneus	x	x	x	x	
Agelaius phoeniceus pallidulus	x		x		
Tanagra affinis affinis	x				
SPINDALIS ZENA BENEDICTI	x				
PIRANGA ROSEO-GULARIS COZUMELAE	x	Subsp.			
HABIA GUTTURALIS INSULARIS ³		x			
Richmondia cardinalis yucatanica		x	x		
RICHMONDIA CARDINALIS SATURATA	x				
Cyanocopsa parellina parellina		*			
Tiaris olivacea pusilla			x		
TIARIS OLIVACEA INTERMEDIA	x				
Sporophila torqueola morelleti		x			
Spinus psaltria jouyi		x			

3. *H. g. peninsularis*, of the mainland, probably not separable.

Peninsula, or have been recorded solely on the immediate coast. These are *Buteo brachyurus*, *Columba leucocephala*, *Crotophaga ani*, *Elaenia martinica*, *Toxostoma longirostre*, *Vireo bairdi*, *Coereba flaveola*, and *Spindalis zena*. *Vireo bairdi* is endemic to Isla Cozumel, *Columba leucocephala*, *Elaenia martinica*, and *Spindalis zena* are exclusively West Indian, including islands off the coast of Central America, and the remaining four species breed in various continental regions, although they are absent from the Peninsula.

When the insular avifauna, which is only one-third as large as that on the mainland, is grouped according to habitat preferences (Table 5), it is immediately evident that the humid region group is disproportionately reduced, as was to be expected since rain forest is lacking on the islands. The five species which comprise this unit are even less important a part

TABLE 5

GENERAL HABITAT PREFERENCES OF SPECIES
BREEDING ON THE ISLANDS

A. Species dependent on the presence of water

<i>Podiceps dominicus</i>	<i>Dendrocygna autumnalis</i>
<i>Anhinga anhinga</i>	<i>Cairina moschata</i>
<i>Butorides virescens</i>	<i>Buteogallus anthracinus</i>
<i>Florida caerulea</i>	<i>Busarellus nigricollis</i>
<i>Dichromanassa rufescens</i>	<i>Aramus guarauna</i>
<i>Casmerodius albus</i>	<i>Rallus longirostris</i>
<i>Leucophoyx thula</i>	<i>Aramides cajanea</i>
<i>Hydranassa tricolor</i>	<i>Aramides axillaris</i>
<i>Nyctanassa violacea</i>	<i>Laterallus ruber</i>
<i>Cochlearius cochlearius</i>	<i>Porphyryla martinica</i>
<i>Heterocnus mexicanus</i>	<i>Jacana spinosa</i>
<i>Mycteria americana</i>	<i>Himantopus himantopus</i>
<i>Eudocimus alba</i>	<i>Chloroceryle aenea</i>
<i>Ajaia ajaja</i>	<i>Iridoprocne albilinea</i>
<i>Phoenicopterus ruber</i> (?)	<i>Dendroica petechia</i>

B. Species characteristic of more humid areas

<i>Crax rubra</i>	<i>Todirostrum cinereum</i>
<i>Aratinga astec</i>	<i>Habia gutturalis</i>
<i>Attila spadiceus</i>	

C. Species characteristic of drier areas

<i>Buteo magnirostris</i>	<i>Contopus cinereus</i>
<i>Buteo brachyurus</i>	<i>Elaenia flavogaster</i>
<i>Columba leucocephala</i>	<i>Elaenia martinica</i>
<i>Zenaida aurita</i>	<i>Elaenia viridicata</i>
<i>Zenaida asiatica</i>	<i>Camptostoma imberbe</i>
<i>Columbigallina passerina</i>	<i>Xanthoura yncas</i>
<i>Columbigallina talpacoti</i>	<i>Troglodytes musculus</i>
<i>Leptotila jamaicensis</i>	<i>Toxostoma longirostre</i>
<i>Amazona xantholora</i>	<i>Dumetella glabrirostris</i>
<i>Coccyzus minor</i>	<i>Mimus gilvus</i>
<i>Playa cayana</i>	<i>Polioptila caerulea</i>
<i>Crotophaga ani</i>	<i>Cyclarhis gujanensis</i>
<i>Crotophaga sulcirostris</i>	<i>Vireo bairdi</i>
<i>Glaucidium brasilianum</i>	<i>Vireo griseus</i>
<i>Chordeiles acutipennis</i>	<i>Vireo altiloquus</i>
<i>Nyctidromus albicollis</i>	<i>Coereba flaveola</i>
<i>Caprimulgus salvini</i>	<i>Cassidix mexicanus</i>
<i>Chaetura vauxi</i>	<i>Icterus gularis</i>
<i>Anthracothonax prevostii</i>	<i>Icterus cucullatus</i>
<i>Chlorostilbon canivetii</i>	<i>Agelaius phoeniceus</i>
<i>Amazilia rutila</i>	<i>Tanagra affinis</i>
<i>Doricha eliza</i>	<i>Spindalis zena</i>
<i>Centurus aurifrons</i>	<i>Piranga roseo-gularis</i>
<i>Centurus pygmaeus</i>	<i>Richmondia cardinalis</i>
<i>Dendrocopus scalaris</i>	<i>Tiaris olivacea</i>
<i>Tyrannus melancholicus</i>	<i>Sporophila torqueola</i>
<i>Pitangus sulphuratus</i>	<i>Spinus psaltria</i>
<i>Myiarchus tyrannulus</i>	

of the total avifauna than the number of species implies. *Atila spadiceus* is the only form to occur commonly, *Aratinga astec* just reaches Isla Holbox, and even there is scarce, *Crax rubra*, a surprising species to be present on Isla Cozumel, is extirpated or exceedingly rare, *Todirostrum cinereum* is known on Isla Mujeres from one specimen, and *Habia gutturalis* does not now exist on Isla Mujeres and may never have been there, although several specimens are accredited to the island. Thus, just one humid region bird is an important component of the insular fauna.

There are 30 species on the islands whose distribution is governed by the availability of water, a reduction of one-third over that on the mainland. Since this element is often neglected by collectors, more attention to water birds would probably raise the number of species recorded.

Fifty-five species are characteristic of drier areas, and of this number eight are not found on the mainland, meaning that about 58 per cent of the continental forms are not represented on the islands.

Banco Chinchorro is the most isolated of the land masses which have resident populations of nonmarine birds. Seventeen species have been recorded from there, of which 13 are water-dependent. *Rallus longirostris grossi* falls within this group and is one of the two races endemic to the bank. *Elaenia martinica chinchorrensis* is the second endemic and may now be extinct. *Buteo magnirostris* and *Anthracothonax prevostii* have been seen once, while *Cassidix mexicanus* and *Dendroica petechia bryanti* are abundant and therefore are the only land birds to become well established on the cay.

Isla Contoy, a less isolated island with slightly more diverse vegetation, has not been studied well and may have a larger avifauna than is indicated by the 14 species presently known from there. Ten birds belong to the group of species dependent on water. The four remaining birds are *Amazilia rutila*, *Tyrannus melanocholicus*, *Cassidix mexicanus*, and *Icterus cucullatus*, all aggressive forms with wide distributions. *Elaenia martinica* is absent, although it has been recorded from all the other islands. It is never abundant and possibly will be found when more work is done.

Isla Holbox is closer to the mainland than the other major islands, but its vegetation is low and scrubby and suited for few birds. Forty-three species have been found there, of which one (*Aratinga astec*) is a humid region bird, 15 are dependent on water, and 27 are characteristic of drier areas.

There are no endemics, but the island shares with Isla Cozumel *Buteo magnirostris gracilis* and *Coereba flaveola caboti*. The latter species occurs on the mainland, but not on the Peninsula, so that the insular populations are isolated from other populations by a minimum distance of 500 kilometers. It is not unexpected that the local race should occur on both Isla Holbox and Isla Cozumel without further subdivision on one. *Buteo magnirostris*, however, is a common species throughout the Peninsula and it is surprising that *B. m. gracilis* should maintain itself on Isla Holbox, which is only a short flight from the mainland and from a large population of

B. m. conspectus. The population of this hawk on Isla Holbox must be extremely small, for I saw none during my visit, and persistent swamping from the coast should be the rule. Only one specimen from the island has been critically examined (Hellmayr and Conover, 1949) and it may be that it is aberrant and similar to the Cozumel race, or the specimen may have been merely a wanderer from Cozumel.

The species which are found on Isla Holbox but not on the other islands are *Busarellus nigricollis*, *Doricha eliza*, and *Camptostoma imberbe*.

Isla Mujeres has a more varied vegetation than the three islands already considered, although it is not nearly so diverse or high as that on Isla Cozumel. Of the total of 43 species known from there, two are humid region forms (*Todirostrum cinereum* and *Habia gutturalis*) and only seven are water-dependent species. *Habia gutturalis insularis*, as it is now known, approaches endemism but, as has been explained elsewhere, the mainland population of the northern part of the Peninsula may prove to be indistinguishable.

Elaenia martinica remota and *Chlorostilbon canivetii forficatus* are the only other insular endemics present on Isla Mujeres. The latter race is known on that island from a single specimen, but is abundant on Isla Cozumel. I strongly suspect that it may have been a wanderer, as was suggested in the case of *Buteo magnirostris gracilis* on Holbox.

Aramides axillaris, *Todirostrum cinereum*, *Elaenia flavogaster*, *Habia gutturalis*, *Sporophila torqueola*, and *Spinus psaltria* are all species which are included in the list of insular species solely because of their occurrence on Isla Mujeres. None of these was seen by me during intensive collecting there and it seems likely that some, or all, of the species might better be considered accidental or, possibly, present at one time but now extirpated.

The largest insular avifauna is found on Isla Cozumel, which is also the largest, and vegetationally the most diverse, of the islands. Exclusive of the vultures and marine birds, 75 species are presumed to breed there. One-quarter (26) of these are dependent on the availability of water; only *Dendroica petechia rufivertex* is endemic, but this race is not water-dependent.

The humid region segment consists of two species and each is represented by an endemic race. *Atilla spadiceus* is widespread on the mainland, extending well into the deciduous forest zone. Its presence on Isla Cozumel is not unexpected. *Crax rubra*, however, is restricted to the heaviest rain forest on the Peninsula and is the bird which would have been thought to be least likely to occur on a deciduous forest-covered island.

Forty-seven species are characteristic of less humid districts. One, *Vireo bairdi*, is endemic, 13 have endemic races, and four, *Buteo magnirostris*, *Chlorostilbon canivetii*, *Elaenia martinica*, and *Coereba flaveola* have races which are endemic to Cozumel plus one or more other islands, although the races of the former two birds eventually may be found to be confined to Isla Cozumel. Thus, about one-third of the species in this group have differentiated.

As it was seen on the mainland, isolation does not necessarily result in phenotypic differentiation. Seven species, *Buteo brachyurus*, *Columba leucocephala*, *Crotophaga ani*, *Elaenia martinica*, *Toxostoma longirostre*, *Coereba flaveola*, and *Spindalis zena*, are not only isolated on the island but are absent from the mainland, yet the three former species have remained monotypic. The same feature may be found in those birds occurring both on the islands and on the coast, i.e., certain species are more prone to subspeciation than others.

The phenotypes of the insular endemic subspecies are extremely varied. As a broad generality, the insular races are darker than those on the opposite mainland, but the races of species which do not occur on the opposite coast, as for example, those primarily West Indian in distribution, follow no discernible pattern.

Rallus longirostris grossi, *Centurus aurifrons leei*, *Centurus p. pygmaeus*, *Attila spadiceus cozumelae*, *Polioptila caerulea cozumelae*, *Piranga roseogularis cozumelae*, and *Richmondia cardinalis saturata* are distinguished from the mainland races mainly on the basis of their darker color; the last is also markedly larger, and a hint of greater size, particularly in body mass, can be discerned in several others, although there are not sufficient data to prove it.

On the other hand, races which are not darker than those on the adjacent mainland are the following: *Buteo magnirostris gracilis*, which is smaller and partially retains its immature plumage pattern; *Chlorostilbon canivetii forficatus*, a race with a longer wing and more deeply forked tail; *Dumetella glabrirostris cozumelana*, which is distinguished by a longer and thicker bill and, possibly, by heavier weight; *Tiaris olivacea intermedia*, a race which lacks the extensive black underparts of the mainland form; *Troglodytes musculus beani*, which is lighter and considerably larger, and thereby more similar to West Indian races; and *Dendroica petechia rufivertex*, a race in which the brown of the head is restricted to the crown, in common with the West Indian subspecies rather than the mainland race, which is brown-hooded. *Xanthoura yncas cozumelae* and *Habia gutturalis insularis*, two very doubtfully distinct races, are not considered.

Chlorostilbon canivetii, which has an iridescent plumage, and *Dumetella glabrirostris*, which is black, could not be expected to follow the trend toward darkened plumage on the islands. The fact that *Buteo magnirostris* never attains fully adult plumage may explain its failure to darken appreciably. The three races which remain are special cases which will be considered when discussing the origin of the avifauna.

Elaenia martinica remota, *E. m. chinchorrensis*, *Toxostoma longirostre guttatum*, *Coereba flaveola caboti*, and *Spindalis zena benedicti* are not represented on the mainland of the Peninsula. No phenotypic pattern can be distinguished. It is noteworthy that *C. f. caboti* is morphologically much closer to the Antillean races than to *C. f. mexicana*, which ranges from southern Mexico to Panama.

ORIGIN OF THE AVIFAUNA. The Peninsula of Yucatán, as it is seen today, is a relatively young land mass. The northern portion, from a line drawn through the axis of the Sierra and extended to both coasts, was covered by the sea in the Quaternary, presumably at least in the last interglacial period of the Pleistocene and probably during other interglacials as well, since only a moderate rise in the level of the sea would have been necessary to inundate the region, provided there has been no subsidence in the land since that time. The low regions in the vicinity of Chetumal and of Laguna de Términos were inundated during this period also. The remainder of the Peninsula, which consists of roughly only one-quarter of its 140,000 square kilometers, is believed to be comprised of Oligocene and Eocene deposits.

Because most of the Peninsula is young, and because there have existed no major geological barriers between it and surrounding areas, which could have effectively isolated the fauna, it is highly unlikely that the region has been an important site of origin for birds above the rank of subspecies. With the exception of a few species, the avifauna appears to have been derived from adjacent areas. Although it might be argued that the central portion of the Peninsula appears to be old enough for species, or even genera, to have evolved there, in the light of what is known of the age of contemporary species of birds, the argument becomes spurious when it is recalled that the district was never isolated from the rest of southern Mexico and northern Central America. While this small region may have been *part* of an evolutionary center, it almost certainly could never have been an evolutionary center by itself. As will be shown, the evidence from the avifauna supports this contention.

When the breeding avifauna is examined with respect to its affinities, it is apparent that it is composed of three elements. First, a group which ranges extensively on the continent, or beyond. Second, an element whose affinities are principally Antillean, including the islands off the coast of Central America. Third, species indigenous to the Peninsula (which is broadly defined to include contiguous areas).

The wide-ranging element is difficult to analyze, considering the relatively small size of the area. This is the element that zoogeographers must often neglect but which frequently provides material for argument counter to the conclusions derived from the endemic element. In spite of some uncertainties, there are two lines of evidence within the wide-ranging element which seem to confirm the hypothesis that most of the Peninsular avifauna has been derived from other regions.

The first of these is the uniformity of subspecific phenotypic expression among many of the birds which are characteristic of the more humid region. Because all the races of this group that are endemic are paler, and in some cases smaller, than any other form within the species, it appears logical to conclude that the species originated elsewhere and later expanded their ranges to include the Peninsula. Here, many reacted to the drier climate and differentiated with notable uniformity of phenotype.

The second line of evidence is found in the group of birds that are characteristic of the drier, geologically most recent, area of the Peninsula and that are isolated, or semi-isolated, from other populations of the species. The best argument in favor of their derivation from other regions is found when one attempts to explain how they could have originated on the Peninsula and then extended their ranges to geologically older localities, which must have already possessed an avifauna. This would be analogous to the invasion of a continent by an insular species—a rare phenomenon. In order to populate the mainland this would have had to have taken place 112 times. There is no reason to pursue this further.

There are two ways in which the dry region birds may be supposed to have reached the Peninsula. One is through fortuitous arrival after the Peninsula attained its present form, or approximate form. The other is to assume that during the last interglacial period the birds were present on the emerged portion of the Peninsula and that as the sea subsided they gradually moved north until they occupied their present ranges.

Both methods seem plausible, and it is conceivable that both played roles in populating the Peninsula. The latter hypothesis is particularly appealing if it is assumed that dry forest was present along the eastern slope of Middle America during the maximum of the last interglacial period, and that this forest extended to the tip of the Peninsula, as it then existed. As the sea subsided and the Peninsula emerged, the dry forest moved northward and was followed by wetter forest which eventually isolated the dry region avifauna from that on the eastern slope. Pleistocene climatology is too poorly known to be of use in this hypothesis. Nevertheless, the theory is reasonable, even though it can neither be proved nor disproved.

The second element in the breeding avifauna is the group with Antillean affinities. There are six species on the Peninsula, or its islands, which are found chiefly in the West Indies: *Columba leucocephala*, *Zenaida aurita*, *Leptotila jamaicensis*, *Elaenia martinica*, *Vireo altiloquus*, and *Spindalis zena*. To this list might be added *Crotophaga ani*, which occurs on the Antilles in the northern part of its range but on the mainland in South America. Griscom (1950) chose to include *Phoenicopterus ruber* within this group, but its range in the West Indies is limited and it also occurs on the Galapagos Islands.

In addition, there is *Pandion haliaëtus ridgwayi*, a race also found in the West Indies; *Dendroica petechia rufivertex*, from Isla Cozumel, which is morphologically closer (and therefore presumably genetically closer) to the Antillean subspecies group than to that which occurs on the mainland; *Coereba flaveola caboti*, another insular race which is phenotypically nearer to those of the West Indies; possibly, *Troglodytes musculus beani*, an insular race which is very different from that in Yucatán, but close to some forms found in the West Indies that are considered specifically distinct (*T. martinica*) by Griscom (1950), but which I believe should be grouped with the mainland species; and also, possibly, *Tiaris olivacea intermedia*, of

Cozumel, which is intermediate in phenotype between the Antillean and the mainland races.

Although these birds have undeniable West Indian affinities, the problem is whether they arrived on the Peninsula from the Antilles, or whether they are relicts of an older mainland avifauna, called by Bond (1948) the "tropical North American element," which is now nearly absent from Middle America but present on the Antilles.

I believe it safe to assume, but again difficult to prove, that all these birds arrived from the Antilles. It will be noted that all the species comprising the West Indian element are found on the islands but only two of these (*Zenaida aurita* and *Leptotila jamaicensis*) occur on the adjacent mainland. The islands have a depauperate avifauna and any species which does reach them probably has a fairly good chance of becoming established, since competition for ecological niches is presumed to be less than on the mainland. Of course, this may work in reverse; species which are unable to withstand the competition on the mainland may find the islands to be *refugia*. *Toxostoma longirostre guttatum*, of Isla Cozumel, may be an example of this. However, the islands are of very recent origin, and it is probable that the tropical North American element had disappeared from the mainland before the islands were available for colonization.

It is not necessary to postulate any elaborate methods, including land bridges, for the West Indian element to reach the Peninsula. The distance between the Peninsula and the Antilles, particularly Cuba, is relatively short and most birds could easily fly the distance. Hurricanes, which usually approach from the east, would assist the dispersal. *Tyrannus dominicensis* and *T. cubensis*, two exclusively West Indian species, have been recorded as strays on Peninsular islands, which supports the supposition that the Antillean element arrived from the Antilles.

The third component of the avifauna is the endemic element, which is made up of eight species: *Meleagris ocellata*, *Amazona xantholara*, *Otophanes yucatanicus*, *Myiarchus yucatanensis*, *Icterus auratus*, *Dumetella glabrirostris*, *Piranga roseo-gularis*, and *Vireo bairdi*. The last species is confined to Isla Cozumel.

There are three possible explanations for their endemism on the Peninsula. First, that they are relicts; second, that they reached the Peninsula early and had time to differentiate into full species; third, that they evolved faster than the other endemics which have reached only subspecific level. There is no way to prove which explanation, or explanations, is correct. Nevertheless, the following is believed to be a reasonable account of the origin of these endemics.

It will be noted that among the eight endemic species *Amazona xantholara* and *Myiarchus yucatanensis* have sibling species on the Peninsula. *Icterus auratus* may be included, even though it is not so similar morphologically to another local icterid as sibling species are usually conceived to be. It is difficult to see how these endemics could have evolved in the presence

of other species which are so similar in morphology and habits. The obvious answer to the question of their origin is that they evolved separately and later came to occupy the same area.

The geological history of the Peninsula, if it has been interpreted correctly, was ideally suited for evolution of this sort. During glaciation, when the Peninsula was emerged, the land was undoubtedly occupied by birds derived from adjacent regions. While inhabiting this newly available area some species probably differentiated, much in the manner of the present-day humid forest races. Later, when deglaciation took place and the level of the sea rose, the birds were forced back and here came into contact with the parent population. Those birds which had failed to differentiate, or which had not differentiated markedly, were probably resorbed, but those which acquired either reproductive isolation or ecological compatibility, or both, were able to exist sympatrically with the parent species. Later, when glaciation recurred, both species reinvaded the Peninsula.

It may be said that the great weakness in this theory is that it requires evolution to the species level in a comparatively short period. However, few will question the fact that races with conspicuous morphological differences, as for example *Chlorostilbon canivetii forcatus* of Isla Cozumel, have evolved in an equally short time. There seems no reason to doubt that a considerably lesser morphological change was all that was required to produce a new species. A slight change in body size, a minor difference in the shape of a bill, the loss of a courtship display releaser, or any number of other changes of like magnitude may cause an incipient species to become reproductively isolated from its parent population, as well as enable it to move into an unexploited niche, and thereby exist sympatrically.

The origin of the five remaining endemic species is much more obscure. *Vireo bairdi*, the insular endemic, appears to be a good case of recent speciation. The only really trenchant characters which distinguish it from *V. griseus* are color and bill size, both extremely plastic characters. Many insular subspecies are known which differ from one another by characters much more marked. While *V. bairdi* might be considered a recently evolved race of the mainland species, it is almost certain that if brought together the two forms would fail to interbreed, not only because of their morphological differences but because of behavioral differences (see p. 235). I believe *V. bairdi* must be considered to have evolved on Isla Cozumel from mainland, although not necessarily Peninsular, stock.

Meleagris ocellata, *Otophanes yucatanicus*, *Dumetella glabrirostris*, and *Piranga roseo-gularis* are certainly relict species whose place of origin is unknown. They appear much too distinct, which implies great age, to have arisen on the Peninsula. Griscom (1926a) was of the same opinion.

It is not possible even to guess at the place of origin of *Piranga roseo-gularis*, since it is a member of a very wide-spread genus. *Meleagris ocellata* and *Dumetella glabrirostris* are tropical representatives of temperate region genera. *Otophanes yucatanicus* is represented in the mountains of western Mexico by *O. mcleodii*, the only other species within the genus. Possibly

O. yucatanicus may be considered a tropical representative of a temperate region genus also, but the reverse is equally possible. At any rate these two, or three, species may have arisen in the temperate mountains of southern Mexico or northern Central America, where they were isolated from the northern populations. Later they may have moved down into the warmer regions of the Caribbean slope and still later onto the Peninsula. What caused them to do this is not understood. Being without close representatives in the area one would suppose that intraspecific competition was not the reason. The climatic refrigeration during parts of the Pleistocene might have forced them from the mountains into the lowlands, but there is no explanation of why they did not move upward again when the climate ameliorated.

Thus, the place and manner of origin of these four species must remain as much of an enigma as in the case of most relict species.

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Fig. 1. Low scrub at Sisal, which is typical of the vegetation along the immediate coast of Yucatán. *Polioptila albiloris* and *Campylorhynchus brunneicapillus* are almost restricted to this habitat. (Jan. 7, 1951)



Fig. 2. El Cuyo, Yucatán. The scrub is about three meters in height and characteristic of that found across the tip of the Peninsula. (Dec. 10, 1950)



Fig. 1. Thick grass covers the fields of henequén on the outskirts of Mérida, Yucatán. *Colinus nigrogularis* is ubiquitous in this district. (May 2, 1949)

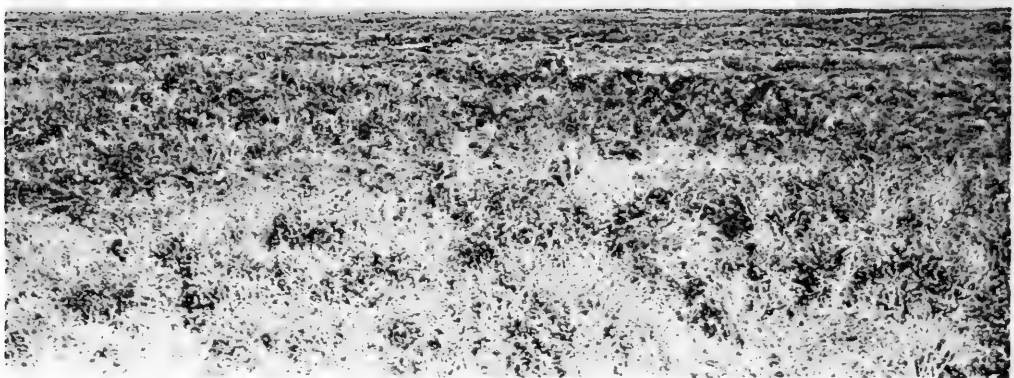


Fig. 2. Uxmal, Yucatán. Deciduous forest hides the roughened limestone of the plain. The Sierra de Yucatán appears faintly on the horizon. (Jan. 16, 1951)



Fig. 1. The deciduous forest is nearly leafless by late winter. Tabi, Quintana Roo. (Mar. 16, 1949)



Fig. 2. A camp at Laguna Chacabacab, Quintana Roo, a region of high rain forest. (May 21, 1949)



Fig. 1. Chetumal, Quintana Roo. A *milpa* burned and ready for planting. (June 17, 1949)



Fig. 2. Chetumal, Quintana Roo. Several years after abandonment a *milpa* is choked with vegetation. *Vireo griseus semiflavus* is abundant in such areas. (June 17, 1949)

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